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PROCEEDINGS OF THE NATIONAL TECHNICAL TASK COMMITTEE ON INDUSTRIAL WASTE HELD AT CHICAGO, ILLINOIS ON NOVEMBER 26-27, 1951

National Technical Task Committee on
Industrial Waste

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Minutes of the meeting of the National Technical Task Committee on Industrial Wastes, held in November 1951, are presented. The policy of this committee is to encourage the collection of basic technical information on waste treatment and pollution abatement measures, and to provide suitable means for dissemination. It calls attention to duplications of research and develops mutually complementary investigations. It also provides subcommittees, as required, to advise the Public Health Service and other regulatory agencies on technical matters.

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MEETING OF THE

NATIONAL TECHNICAL TASK COMMITTEE ON INDUSTRIAL WASTES

November 26-27, 1951
Hotel Morrison, Chicago, Ill.

* * * *

Chairman - Lyman Cox
E. I. DuPont de Nemours Co.
Wilmington, Delaware

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THE NATIONAL TECHNICAL TASK COMMITTEE ON INDUSTRIAL WASTES

MEMBERS ATTENDING

INDUSTRY	NAME
Automotive	F. C. Fluegge G. J. Gaudaen
Beet Sugar	D. J. Roach
Canning	N. H. Sanborn
Chemical Manufacturing	Lyman Cox Thomas J. Powers
Coal	Dr. Harold J. Rose
Corn	Howard Prentice Dr. MacIntosh
Dairy	Frank McKee A. J. Steffen H. L. Pollard
Distilling	Alex. J. Davidson
Electroplating	Dr. C. Fred Gurnham
Fermentation	Dr. C. S. Boruff
Fisheries	Wayne M. Waller
Frozen Foods	S. E. Smith Herman P. Schmitt
Gas Manufacture	J. Stanford Setchell
Iron & Steel	Dr. Richard Hoak
Lumber	Dr. Herbert B. McKean
Manufacturing	Roy R. Green
Meat	M. D. Sanders H. D. Tefft
Mining (Other than iron and coal)	Harry W. Marsh
Non-ferrous Metals	R. K. Stroup

MEMBERS ATTENDING (CONT'D)

INDUSTRY	NAME
Paint, Varnish & Lacquer	Leo Guthman
Petroleum	L. C. Burroughs R. N. Giles
Poultry & Eggs	Miss Jane Wasmuth W. C. Loy
Power	John H. Jones
Pulp, Paper & Paperboard	Dr. Harry Gehm
Railroads	Wm. A. Hazlett D. C. Teal
Rubber	D. L. Pellett
Textiles	E. A. Leonard
State	C. W. Klassen
Water Pollution Control Advisory Board	L. A. Danse
Public Health Service	Carl E. Schwob (WPC) L. F. Warrick (WPC) Paul Reed (WPC) C. C. Ruchhoft (EHC) Paul Haney (EHC) Hayse Black (EHC)

OPENING ADDRESS - CHAIRMAN LYMAN COX

This could properly be called "a swan song" because this is the last meeting I will be able to attend. I regret this decision. Actually it was brought about by the fact that I was assigned to other work which involves supervisory responsibility rather than continued specialization in pollution abatement work. I've enjoyed working with you, and will certainly miss the good fellowship that goes with these meetings.

Because of the fact that several new industrial groups accepted invitations and named representatives to our Task Committee and also because of the fact that other members are attending their first meeting, I want to review very briefly the Committee's origin and the policies which have been established so far. I am sure all of you are more or less familiar with Public Law 845, the Federal Water Pollution Control Act, which was passed in June, 1948. That Act states that it is the policy of Congress to provide Federal technical assistance to States, interstate agencies and industries and financial aid to State and interstate agencies and to municipalities in the formulation and execution of their stream pollution abatement programs. It also says that the Surgeon General shall collect and disseminate information relating to water pollution and the prevention and abatement thereof; support and aid technical research to devise and perfect methods of treatment of industrial wastes which are not susceptible to known effective methods of treatment; make available to State and interstate agencies, municipalities, industries and individuals the results of surveys, studies, investigations, research, and experiments relating to water pollution and the prevention and abatement thereof. You actually do not have to look much beyond those paragraphs in Public Law 845 to recognize the fact that a Committee such as this can help the Public Health Service to carry out some of its responsibilities. Here we have representatives of Trade Associations and representatives of industry who can do much to select and evaluate research projects, exchange ideas and contribute information, and see that the right kind of information is made available to the Public and other groups interested in water pollution abatement.

As far as operation of the Committee and the rules and regulations of procedure that serve as guides, they are policy only as they apply to this Committee. These were adopted at earlier meetings and have been summarized in a small document marked "Policy and Procedures." The policy part of it, I think might well be read, because it states rather nicely the views that this Committee holds.

"It shall be the policy of the National Technical Task Committee on Industrial Wastes to encourage the collection of basic technical information on waste treatment and pollution abatement measures, and to provide suitable means for dissemination. This material shall be circulated among its members, and provided to qualified public or private agencies or individuals. It shall call attention to duplications of research and endeavor to develop mutually complementary investigations. It shall provide subcommittees, as required, to advise the Public Health Service and other regulatory agencies on technical matters as requested by such agencies, or to initiate such advisory subcommittees on its own motion. Where appropriations by the Congress require consideration it shall confine its recommendations to requests for funds for basic research in the broad public interest; it shall not concern itself with appropriations providing loans or grants to municipalities for preparation of plans or construction of treatment works, or with any legislation that has a political connotation. It shall provide for periodic releases of information about its activities to acquaint the public fully with its objectives and accomplishments; meetings of the Committee shall be closed to the press and the general public to permit complete freedom of discussion and to avoid the embarrassment of misconstruction of any statements made; publicity prepared by the Committee shall be reviewed and released by the Public Health Service. Membership on the Committee shall be confined to industry personnel more or less directly concerned with waste utilization and treatment problems. It shall recognize the impropriety of using information supplied by industry as a means for coercing or embarrassing industry, and shall guard against any improper use of such material. No departures from these principles of policy shall be permitted without consent of the Task Committee." That, I believe, will give you a fair background of the policy of the Committee and some of the things which underlay its organization and of course, as all of you know already, the way that you and I got on the Committee was that Lou Warrick acting for the Water Pollution Control Division invited a number of Trade Associations and industrial groups to name people who would serve on the Committee.

Now rather than, as I might in retiring, offer you a lot of good advice I will tell you about my next door neighbor. He is an old Scotchman about 85 years old who was formerly a Baptist minister. That is, you will recognize at the outset, an odd combination; a real live Scotchman and a Baptist. Well he loves to tell the story about the visit he made to Scotland some years ago to attend a World Sunday School convention. While he was over there he met lots of Scotchmen, and they recognized him for a Scotchman because the burr that he still had on his tongue got thicker by the minute. They could not understand how it was that he was a Scotchman and yet he was a Baptist. They kept teasing him about it and asking questions and finally he turned to them and said "Whatever gave you the idea that a Scotchman couldn't improve himself? Well that is the general idea that we have here. We all recognize that we are moving in right direction but we have a lot of improvement to make. Thank you.

COMMITTEE APPOINTMENTS - CHAIRMAN LYMAN COX

We will skip over Item 3 of the agenda as it will be covered in the Secretary's report., and that brings us to Committee appointments for the meeting. One of the things which will result from my retiring from the Committee is the need for election of officers and I think in this election our present officers should be available for nomination. In order that the thing may be handled in a carefully considered manner I want to appoint a nominating committee and ask that they consider the available candidates carefully and come up with a slate of nominations tomorrow afternoon. I would like Lee Burroughs to serve as Chairman of that nominating committee and M. D. Sanders, C. S. Boruff, and L. F. Warrick to serve on it with him and I also will be glad to assist with it. I appoint R. D. Hoak to serve as chairman of the committee on policies and procedures with Alex J. Davidson and William A. Hazlett to work with him. It might very well be that policies and procedures are all right as they are. One thing that I noted - we had Lou pinned down close on the agenda. It has to be out in one case at least two weeks before, or rather 20 days before, but can not be issued more than 20 days ahead of the meeting so he has to hit it right on the head. Now that is imposing, I think, a slight difficulty on him so that is one small revision you might want to make.

The third committee I would like to appoint would be on news releases in case we have some reporters around asking you what we are doing or asking that they be given a summary of the meeting. Will Roy R. Green serve as chairman of that committee and Howard Prentice and Frank McKee work with him?

L. BURROUGHS: When should we report back?

L. COX: That is one of the last items of business on the agenda. If you have that ready by tomorrow after lunch I think that will be ample time. Are there any other comments or discussions with regard to these committee appointments, or do you see the need for any additional committees?

REPORT OF THE SECRETARY - L. F. WARRICK

There is substantial progress to report since the last meeting of the National Technical Task Committee on Industrial Wastes in Cincinnati, Ohio, January 23-24, 1951. During the interim the Secretary has conferred with many members and others in industry to facilitate carrying out the functions of the Committee, namely:

"(1) to inventory, appraise, coordinate and promote research and development work on utilization, treatment and control of industrial wastes; (2) to facilitate securing uniformity in methods of measuring and evaluating trade wastes in water quality control; (3) to stimulate more effective working relationships on technical phases of the work of improving the quality of waters between industry and Federal, State, interstate, and local governmental agencies; (4) to help point up the activities on industrial wastes of the Environmental Health Center; (5) to aid in the establishment where major needs exist for any grants-in-aid for obtaining basic information relative to taking care of the industrial waste problems in water pollution control; (6) to stimulate further adoption of practical methods now known and to be developed for minimizing and treating wastes in effecting stream improvement; (7) to secure wide dissemination of information on technical progress and what is being accomplished by various branches of industry, maintaining suitable contacts with technical societies, professional organizations, trade associations and other such groups issuing publications that reach those concerned with pollution problems; (8) to aid in promoting such training as necessary to facilitate efficient operation of waste recovery and treatment systems in industry; and (9) to perform such other technical tasks pertaining to industrial effluents as appropriate to stimulate improvement in the quality of the water resources of the Nation."

It is thought, particulary for the benefit of our newer members, it would be well to review these functions of the Committee as a background in connection with our activities. All such activities are directed toward attaining our objective, as follows: "to perform technical tasks pertaining to industrial wastes in cooperation with the Public Health Serivce and all others concerned with improving the quality of our water resources." This is the basis on which the Committee was originally established.

Everywhere contacts have been made to stimulate further cooperation by industry on waste utilization or treatment problems, the reaction has been quite encouraging. More attention is being given by management to work that needs to be done to provide the answers. There is a willingness to discuss ways and means for carrying out the joint efforts in the solution of these waste problems and there is apparently genuine interest in the accomplishment of what is covered by the Task Committee functions. There have been offers of assistance in the work. The outlook seems good barring all-out war for going forward with those undertakings which are essential for taking care of at least the more urgent problems.

Items of interest to the Committee that have occurred since the last meeting are set forth briefly under the following headings.

Membership Changes And Additions

Due to reassignment of duties in the MCA Water Pollution Abatement Committee, Lyman Cox and H. D. Lyon will not represent the chemical manufacturing industry after the November meeting. Thomas J. Powers of the Dow Chemical Company will succeed Mr. Cox in his dual role as Chairman of the Pollution Abatement Committee of the Manufacturing Chemists Association and as member of the Task Committee. Bruce Dickerson of the Hercules Powder Company will replace Mr. Lyon as the alternate member. The new representative for the non-ferrous metal industry is R. K. Stroup. Mr. Stroup is Chief Engineer for the Eagle Picher Mining & Smelting Company, Tri-State Mines Division, Cardin, Oklahoma. Representatives of the poultry and egg industry have been appointed. They are Miss Jane Wasmuth, Assistant to the President, Institute of American Poultry Industries, Chicago, and Mr. W. C. Loy, of Wilson & Company, Chicago. E. A. Leonard and J. H. Dillon, representatives of the Textile Foundation have asked that their positions be reversed. Mr. Leonard is now the member and Dr. Dillon is the alternate member for the Foundation. The power industry is represented for the first time at this meeting. The representatives are John H. Jones and Walter C. Gumbel, both of the Monongahela Power Company, Fairmont, West Virginia. William Blum of the Electro-Deposit Section, National Bureau of Standards, is retiring from his position with the Bureau and has requested the American Electroplaters Society to appoint a replacement for him on the Committee. The Electroplaters Society has had three individuals that were designated by the Society. Fred Gurnham is representing the electroplaters here today in the absence of Mr. William J. Neill. Harry W. Marsh of the Idaho Mining Associations, Boise, Idaho, has been designated by the American Mining Congress as their representative concerned with mining other than iron and coal mining.

Task Group Activities

The task sections have also been gradually developing during the interim period since our last meeting and they have become active in some fields that previously had not been covered by the committee. During this meeting there will be a report of the automotive advisory section by F. C. Fluegge and George J. Gaudaen. Steps are being taken to extend coverage to additional branches at the Industry. Mr. Fluegge will present the report and Mr. Gaudaen will distribute copies of the report to you so that you can read it at your leisure. The task committee on dairy waste disposal met on May 21, 1952 in Chicago and they discussed the various items that that task committee had brought up for their consideration, particularly work on the inventory and guides and other such items. A summary of the work of that committee was received from Chairman Frank J. McKee who will probably report further at this meeting on developments, The committee on meat packing waste disposal, of the American Meat Institute met this spring in Chicago. The progress report on the Committee was submitted by M. D. Sanders, committee chairman. They furnished quite a bit of information for the bibliography and have also indicated a number of items that might well be considered in the revamping of the industrial waste guides. Fred O'Flaherty transmitted conclusions reached by the committee on industrial waste disposal of the American Leather

Chemists Association with regard to guide revision and inventory preparation for the tannery industry. The Manufacturing Chemists Association of the water pollution abatement committee met August 16-17, 1952, in Michigan, at which meeting the previously mentioned action affecting representation on this committee took place, and they considered further the problems that related to their tasks, and the overall program. The first meeting of the representatives of the coal industry advisory committee of the Ohio River Valley Sanitation Commission was held in Cincinnati on August 29, 1952. The Chairman of that committee is also a representative of the industry on this Task Committee so we have full liaison with the work being done by the Ohio River Valley Water Sanitation Commission dealing with these waste problems.

The financing of research has come in for quite a bit of discussion. Particularly there has come to our attention the need for adequate information on the expenditures by industry for industrial waste research. This matter was called to the attention of the Task Committee chairmen. It is suggested that they might get together such information as a task group activity. There have been some rather questionable figures that have come out recently. There are excerpt here a few items that came out at a recent meeting of the A.P.H.A. that might well be corrected by more adequate information that this Committee might gather. In covering the field of acceleration of research in medical and allied sciences there were several tables presented that are reasonably accurate as far as governmental expenditures are concerned. It was pointed out that of a total of 7.2 millions of dollars that are apparently going into research projects during this past year in the field of environmental health, industry is indicated to have expended, including the fields of air and water pollution control, a total of 1.8 million dollars. This figure you can readily appreciate is extremely low. It is believed that when the total is obtained it will be found that industry is expending much more than this on just water pollution alone. It would seem that the thing we want to do is to get the facts and correct any misunderstandings. Determining what is actually being spent on waste disposal research by industry might very well become a Committee task.

The question of sources of funds for financing expanded research has come up. Your Secretary attended a meeting with the representatives of the meat industry at Minneapolis recently. A very interesting research project was proposed there to be carried out at one of the member companies. The question of financing came up at that meeting. The question of how some of this financing might be done has suggested the possibilities of utilizing such plans as covered in the little book submitted to you in the agenda. It is hoped that we can have a full discussion at this meeting of that particular topic.

Research at the Environmental Health Center on industrial wastes is going forward in all sections. The total number of projects at present is 73 covering industrial wastes and more or less allied subjects. Those that are specifically concerned with industrial wastes number 35. Mr. Haney is going to cover those in his review of the Environmental Health Center activities and he will give you the results of the poll that was taken of the views of members of this committee on the type of research that was desired to fill existing gaps in basic knowledge in the field of water pollution control necessary to solve trade waste problems.

The status of the inventory will be presented during the meeting. The list of items for the punch cards was sent the members for comment last April Suggested revisions and corrections have been incorporated in a new list that is to be used in preparation of punch cards. Sample cards are included in the agenda folder that you all received. It is hoped that we can get your final views on the suitability of that card at this meeting. If there are any items not included in the listing that was submitted that you think should be included to make these cards of maximum usefulness to you, we want your suggestions.

D. J. Roach has written a summary of the current situation regarding industrial wastes in the beet sugar industry. A bibliography and abstract of articles relating to slaughterhouse and packinghouse wastes by Donald G. P. Gold of the Engineering Experiment Station [illegible] the University of Texas has been received from the meat industry representatives whose Chairman is M. D. Sanders. R. D. Hoak, W. W. Hodge, H. F. Hobley and L. C. Burroughs have described waste disposal methods in the industries they represent in report form. Dr. Hoak represents the steel industry; Dr. Hodge, the coke industry; Mr. Hobley, the coal industry; Mr. Burroughs, the petroleum industry. Mr. Burroughs has contributed two bibliographies on waste disposal methods in the petroleum industry. Member industries for which data has been submitted on inventory forms are chemical manufacture, corn, dairy, distilling, fermentation, frozen foods, iron and steel, petroleum, pulp, paper and paperboard. If your industry is missing from the list we are looking forward to receiving your cooperation. Unsolved problems of the dairy industry have been listed by the task committee on dairy waste disposal. Abstracts of articles on dairy waste treatment published in Sewage and Industrial Wastes Journal for 1949 and 1950 have been prepared and submitted by H. A. Trebler. The chemical industry subcommittee of the committee on industrial waste disposal, American Leather Chemists Association reported that there was nothing new to list for the tanning industry and, that the present guide is essentially current in its present form. Several representatives have written that inventory data is currently being assembled by their task section. As previously mentioned the automotive industry is moving along on their program and their report will be submitted here.

Revisions of the dairy guide have been received; the meat guide has been received; suggestions for the petroleum guide have been received. The distillery guide has been brought up-to-date by A. B. Davidson. Alex Sigal revised certain sections of the fermentation guide. C. S. Boruff submitted fermentation chapter information that was assembled in conjunction with getting out his portion of the ACS monograph which was presented at the Diamond Jubilee Meeting of the American Chemical Society in New York in September. Harry W. Gehm has done the same with respect to the pulp, paper and paperboard information. Fred O'Flaherty has submitted his suggestions for bibliography additions to the tanning industry waste guide.

Timely Topics: At the time of the last meeting of the Committee and during the current year there have been a number of requests received for information on current developments that would often be of general interest to all concerned. For instance, there was discussion at the meeting in Cincinnati concerning the proposals to stimulate construction of industrial waste treatment facilities through the enactment of accelerated tax amortization legislation. Inquiries have been made about existing laws and water pollution regulations that have been adopted pursuant to such legislation. Accordingly, the desirability of keeping the Task Committee informed on items other than would be of interest only to an individual member has suggested that there be issued periodically a newsletter or bulletin. The vies of the Task Committee on such a plan and the coverage that might be undertaken with contributions of news items being made by the Committee and others associated with it in dealing with industrial waste problems are needed as a guide to future action. News items might simply cover Task Committee activities or they might include in addition timely topics in which members have shown an interest. Incidentally, it was found out just about the time that we were going to mail out this sample copy of the newsletter that, before any Government agency sends out a newsletter, it must go through departmental channels and be approved by the Bureau of the Budget. Accordingly, we have to go through that procedure in order to get out such a letter.

There have been a number of pamphlets and bulletins that have been sent to the members of the Task Committee during the past year, a total of some 15 major items having been sent out. Some of the bulletins forwarded to you include Water Pollution in the United States", "Training Programs of the Environmental Health Center", "Plating Room Controls for Pollution Abatement" gotten out by the Ohio River Valley Commission and "Industrial Waste Guide for the Beet Sugar Industry" and "Procedures for Sampling and Measuring Industrial Wastes" and similar items. I submit this as the Secretary's report.

Mr. Cox: You all heard Mr. Warrick's report. Do you have any comments concerning it? May we have a motion that the Secretary's report be accepted?

Mr. Gurnham: I move that the report be accepted.

Mr. Leonard: I second the motion.

Mr. Cox: Is there any discussion - Those in favor of adopting report indicate by saying "aye". Opposed "no". Motion passed.

PUBLIC LAW 845 - C. E. SCHWOB

First, I want to say it is a pleasure and a privilege for us to come and talk with you people about water pollution control and what we are doing. I also want to commend you for the job you're doing. I regret very much that our friend Lyman Cox is going to leave us, but you know you always like to see your friends go up the ladder and since you are going up the ladder, Lyman, you go with our blessing. I'm sure that goes for all of this group.

Coming out here last night I was thinking about what we have been doing in this country since 1800. What did we do during the first 50 years of existence of our United States? We expanded our lands; we kept going further and further West developing the land. Accompanying this development of the land, and continuing through the latter half of the 19th century, there was an ever-expanding utilization of our forest resources. And during the first 50 years of the Twentieth century we have been developing more and more uses for our water resources. That is as it should be, but we've gotten to the place now where we need to pay more attention to those water resources. I am sure that all you gentlemen in industry realize that far better than we do. I think we need to start doing a better job of preaching the gospel about this great natural resource, water. We all say we need to do something about conserving our water, but are we doing it? It's a revelation to me to see a group of industrial representatives like you people here, who have an interest in finding ways of solving industrial waste treatment problems. If someone had told me ten years ago that it would be possible to get a group of individuals around a table like this, to talk about the problem of industrial waste, I would have said it couldn't be done. Yet we are doing it now. Why? Because we all recognize the need for water conservation. I hope we don't wait too long before we put our shoulders to the wheel and get others to help, so that we can conserve the waters we have.

People are beginning to realize that something must be done. As an illustration of what is happening in many areas of the country, a Congressman from the South called us the other day, saying that a municipality in his district was asking for help in correcting a situation caused by industrial waste pollution. Industries which had come into the area a few years ago had been told to go ahead and utilize the waters to their fullest extent. Now the city is trying to attract more industries, but without success. Why? Because some of the industries already there have failed to do the job they should have done in treating their wastes, and the quality of the water now available for industrial use isn't up to the standard necessary to attract new industries. Now the people of the city are up in arms about a situation they themselves invited. They want Congress to do something about the pollution.

What I'm leading up to is this. I think that unless we who are interested and who have a definite stake in this whole field of water resources, take a realistic look at the problem and do something about it, the first thing we know somebody is going to go to the people who make the laws of this land and convince them that there should be a law putting all responsibility for water pollution control in the Federal government. We in the Public Health Service don't want that and I'm sure you people don't. We must show the public that we are competent to do a good job with the team work approach that is being followed now. As you know, when pollution control work started many years ago, industry was going one way, conservation was going another; those in the health field took the position that only the health aspects were important; those in agriculture were interested only in the effects on agriculture. In other words, each field of interest might be represented as a spoke in the wheel, each one going out in a different direction. That isn't true today. Today we are around the rim of this wheel, all concentrating our efforts toward conserving the waters of the country, toward the use and re-use of those waters for all purposes.

I'm sure we can solve the problem. But one thing bothers me. You gentlemen have all read the President's Water Resources Policy Commission Report. Recommendation Six of that report says "if the Federal, State, local cooperative pollution control program fails to provide the country with clean rivers within a period of 10 years, the 1948 Act should be reconsidered with a view to providing for Federal enforcement without the requirement of State consent where polluted streams are within the jurisdiction of Congress." A great deal of testimony was presented during both the House and the Senate hearings on the Water Pollution Control Act which favored strong Federal legislation. We don't want it. We feel that the problem can be best solved by cooperation rather than by "wielding a big stick." The President's Water Resources Policy Commission Report is being reviewed now by the Bureau of the Budget and among the recommendations made to Congress, on the basis of that review, will be recommendations for amendments to Public Law 845. When those recommendations are made, you can rest assured that you people will have a chance to look at them through Mr. Warrick.

Another development that you will be interested in is the fact that the Paley Commission, studying critical raw materials, has, for the first time, included water as a critical raw material for industries. That didn't just happen. A lot of you people have said that water is a critical raw material for you.

I hope you people here will understand that we are a cooperating or an assisting organization. We are a Public Health Service with the emphasis on the service part, and what we are trying to do is to provide a service to you people, the kind of service that you want when you want it. The only way we can know what you want and when you want it is for you to come to us and tell us. Give us an idea of what you want. I would like to pledge to you the complete support of our Division of Water Pollution Control, and tell you that your wants insofar as we can provide them will be provided. I would like to have you give us good constructive criticism on the program we are operating. That kind of criticism pays dividends.

COMMENTS - L. A. DANSE

Thank you, Mr. Chairman. I want to join with Carl in expressing my gratification that Lyman has gotten a boost. I am awfully sorry to lose him, but I am sure he is going to do as much good in a supervisory capacity, without losing sight of our aims, and our ideals. I'm sure we'll have a sympathetic ear in his industry with his accession to managerial rank. Carl mentioned that you may look forward to the customary cooperation. If anybody had told me ten years ago that the United States Public Health Service, or any of those bureaucrats in Washington, would ever listen to a group like this, I would have said "Oh, no, they just don't do that." I think Mr. Marsh here from out in my home country is a living witness to the fact that industry does not need to be kicked around. Industry is happy when they meet a bureaucrat who wants cooperation and will give him all the cooperation there is. I point with pride in the fact in going around the country discussing this problem with various groups, I find sentiment distinctly to the point that the municipalities are lagging way behind industry. I told you that at your last meeting, and as I get about between these meetings it becomes more and more pronounced that we as citizens are going to have to do better than we as industrialists are actually doing. I'm very happy to see that. Carl mentioned that, as we expanded westward we utilized our resources; and I point to the fact that in utilization there was some waste. We have now caught up the slack and recognize that there has been some waste and we are now trying to conserve. That conservation is taking more and more angles. It's particularly pleasing that outfits like the Conservation Foundation of New York are taking cognizance of the situation and are calling attention in loud and very pointed terms to the situation with regards to water.

I happen to work for an industry that has to use quite a bit of water. You gentlemen probably will be interested to know that it takes from 12 to 15 thousand gallons of water to build an automobile. You probably didn't think of that. My company alone uses 3,500,000,000 gallons a month and that isn't hay, because it costs us over a third of a million dollars each month. Just think of it -- only one company in the automotive industry -- a third of a million dollars -- 3,500,000,000 gallons of water a month.

We can't put on a square inch of chromium--and you fellows love chromium on our product, you don't want cars without it--we can't spray on a square inch of paint, we can't heat treat a pound of steel and most of the steel in our cars is heat treated, without water. Everything we do in processing requires water.

Now we have used up or polluted the surface water--we've pumped down the ground water; our plant engineers through industry are screaming for more water. We have several plants in my company alone, where we would like to expand, but can't expand because we can't get process water. We are going to have to move to get process water. That is a sad commentary on this country which has always thought that it was one of "have" nations. I am sorry that we are a "have not" nation when it comes to water. Up around the Great Lakes here we have the greatest body of fresh water in the world. Unfortunately, the rest of the country is not so well situated. If any of you have seen General Electric's new picture, "Pipe Line to the Clouds", it points that up in very nice terms -- it's an excellent film. You can all use it in your Industry Task Committee work with your home industry groups. By all means get "Pipe Line to the Clouds" and start it circulating. It's a way better than the old picture "Clean Waters" and it tells you about how the water has gone -- you pump it out of the ground, you use it once and swish! it's in the ocean. Then it goes into the hydrologic cycle and it does not go back down into the ground.

We have come into contact with that to the point where our real estate division has purchased several parcels of land with a view to wartime plants. As soon as management looked over the situation and they said "Why did you buy that land -- Where are you going to get the water -- Sure you have good transportation -- Sure there is a good labor market, but what will we do for WATER?" That has led to our Vice-President of Manufacturing writing a little script that he is sending out among the plant managements, which he entitles "Water - Our Most Essential Raw Material." He is trying to teach the rest of our top management executives that this water thing must be taken into account.

All our industries are in the same boat, they are going to go into a terrific expansion. It will be even more severe and more abrupt if we do get into total war, because the situation won't brook any time delays then. There will be no opportunities for preparation. We must act now, but I tell you, gentlemen, we can't act the way we could if we had water, because it just isn't available. And I'm telling you that you don't want to have to go to your industry people and say there is only one place to locate -- that is around the Great Lakes -- that is the only place to get decent process water. You may be confronted with just that situation and that's just too bad. Our industry, and I think a number of other industries, are urging all operating people -- that goes all the way down the line through supervision from top executives, starting with the presidents of the companies; urging everybody in supervision to get acquainted with the conservationfolks. Now, the conservation folks have been responsible for much of the abatement legislation. I can tell you very definitely that it was the conservation groups who put Public Law 845 on the books; and it behooves us to make friends with them. We can -- and many of us are. If we make friends with them we will find we can use them to good advantage. They will help us instead of sticking their feet out for us to trip over when we go by. It's an excellent idea.

Almost every State, has a United Conservation Club group of some kind or other. You industry folks would do very well to associate yourselves with those united conservation people. They all have legislative committees. They all have conservation committees. They all have industry committees of a kind. If you get acquainted with those folks they will give you a lot of information and you can give them a lot.

That is the purpose of this NTTCIW group. It's a bilateral set-up. You were set up at Mr.Warrick's suggestion to help formulate the policies. As Mr. Cox pointed out, you are not a policy-making group, but certainly you are going to help formulate the policies, and being bilateral you can help your industries formulate the policies at home throughout your groups just as well as you help Lou and Carl formulate the policies of the Public Health Service. It is an opportunity. There is only one definition of opportunity — you'll read all sorts of them — you'll hear all sorts of highfalutin stories about opportunity; but it has just one definition. This is it — making the most of what you have, here, NOW. That is the definition of opportunity.

Public Law 845 is on the books. It is a weak sister because Congress would not appropriate money, but you are making it work. I think your being here is the greatest evidence of the fact that Public Law 845 is working. I like to believe; listen, you gentlemen from Washington — I like to believe that Public Law 845 is FAR MORE EFFECTIVE in its moral and spiritual aspects than it would be in a purely material aspect. Suppose you got the money — suppose you made it a straight police action. I don't believe you can kick a man into submission nearly so well as you can teach him the errors of his ways and lift him up. You folks are going to do that — you are doing it, and I am certainly happy to be a member of the set-up and be with you. I am tickled pink that I can go around and tell the State and municipal people "Look at industry." Thanks a lot.

L. COX: I am sure you all greatly appreciated the remarks concerning P.L. 845 and the country's need for the conservation of water. Of course, all of us recognize that an important part of the job is the abatement of pollution. Mr. Danse mentioned that it was a good idea in fact, there were many advantages in making friends with the conservation people. Such a step has been taken in this regard on behalf of the Committee. At the dinner tonight and for the showing of the picture, the Secretary of the Isaac Walton League, Mr. William Voigt, Jr., is going to be with us. This will be a chance for all of us to meet him and for him to learn first hand there is such a Committee, what we look like, and generally pick up a bit of information from individual conversations as to how we look at things. Do other members of the Committee have comments they would like to offer at this time, either as to P.L. 845, and how it is working, or how the administration might be improved — comments that you might care to make about this subject of water conservation? This is your meeting. We only bring this information to you because it is pertinent, but at the same time we want everybody to be perfectly agreeable to offer any ideas they have or major criticisms, or objections.

H. MARSH: What are the possibilities of continuing P.L. 845 pretty much in its present form after June of this year?

C. E. SCHWOB: The responsibilities we have under P.L. 845 do not go out of existence in 1953, but the authorization for appropriations does expire so that has to be extended. If we continue to carry on a program, after July 1, 1953, we have to have authorization for appropriations. From what we have been able to find out, we don't expect that P.L. 845 will go out of existence. There are things in the law that are not workable and that should be amended. Of course, the President's Water Resources Policy Commission is making recommendations covering certain parts of the law the Commission thinks should be amended. They have not recommended changing the regulatory provisions, and there are many other parts of the law that shouldn't be changed. But there are some provisions that are not workable. For example, some sections of the present law refer only to industrial wastes. You just can't separate industrial wastes from domestic sewage. An amendment to eliminate that distinction would make it easier to administer the law and would be of benefit.

L. COX: Carl, I might ask, are there many organized efforts to offer changes to law or do most people seem to be rather pleased with the way it is?

C. E. SCHWOB: Most people are fairly well pleased with the way it is going. There are some things they would like to see amended. For example, the law says that the States must use the grant funds they receive under section 8(a) in connection with industrial wastes. It is impossible to separate the two. We think, too, that we should not only do research on industrial wastes, where industry wants some assistance, but that we should also try to come up with some answers on cheaper methods of sewage treatment.

L. COX: Of course, there is the opportunity for mixed treatment.

C. E. SCHWOB: That's right, but you still have your hands tied if you stick right to the letter of the law, which specifies industrial waste treatment.

L. COX: Are there other comments or questions that anybody wants to ask?

R. HOAK: The President's Water Policy Commission Report has been mentioned and I recommend to those who have not studied that document that they obtain a copy, especially Volume 1, and read it with care. The problem we are engaged upon includes many things other than suitable treatment and disposal of industrial wastes. Actually, we are dealing with one specific phase of national water policy but each is somewhat dependent upon the other. The President's Commission made a number of recommendations, and many of us would find the recommendations themselves more or less acceptable, but in reading about the way in which these recommendations are to be implemented you will find that the trend is toward complete control from Washington. The President's Commission Report is perhaps the most strongly socialistic document that I have yet to see come out of Washington and it includes not only considerations of water policy but the related problems of land use, reclamation and drainage, forest products, and mineral resources. It proposes establishing drainage basin authorities governed by commissioners appointed from Washington without any voice from the electorate in their appointment. In general, the tendency of the report is to lose sight of the major principle that was established by the Engineers Joint Council Water Policy Panel, namely, that where public works are to be constructed this should be done at the lowest possible level of Government at which efficient construction or operation can be accomplished. I advise all of you also to obtain a copy of the Engineers Joint Council Report which is entitled "Principles of a Sound Water Policy" and with it their critique of the President's Commission Report. I think you will find a comparison of those documents instructive. The EJC Report was prepared by a voluntary group of some 80 professional men, mostly engineers, drawn from all sections of the country. These men volunteered their services and for the most part paid their own expenses; when they were unable to do so they were helped out by their professional societies. I recommend most strongly to you that you obtain a copy of that report together with a copy of the critique that accompanies it, and compare that with Volume 1 of the President's Commission Report.

L. COX: Thank you very much. Can you give us an address where this report can be obtained?

R. HOAK: American Society of Civil Engineers, Engineers Society Building, 29 W. 39th Street, New York 18.

L. COX: For those of you who are from New York, Pennsylvania, New Jersey and Delaware I would also suggest that you write to Jim Allen at the Broadstreet Suburban Station Building in Philadelphia and ask him for a summary of the proposal which Incodel has offered for the overall development of the Delaware River Valley. They have prepared and are trying to obtain the passage of reciprocal legislation in all those four States for a plan which would do just what the Engineers Joint Council recommends, namely, develop water resources at the lowest level of government that can do the job. By getting the Incodel summary, you will have an example of a proposal which would accomplish land and water development in the river valley through local and interstate efforts rather than through Federal direction. Are there other comments on this subject we have under discussion?

H. GEHM: I would like to reiterate a little further on that Lyman. Speaking for an Industry which supported to quite a degree P.L. 845 - before its passage, we feel that this law was produced in a democratic manner;

that it is now showing signs of working reasonably well. We note this by the stimulation in industrial and other stream pollution control work during the period that this law has been in effect. What industry, I think, is concerned about was the tampering Dr. Hoak was speaking of. The President's "Water Policy for the American People" is an example of such and does not reflect the sense of the hearings held in connection with it. Secondly, I think that we should be much more concerned over the legislation that has been floating around and the socialistic suggestion that the country be split up into a series of TVA's which would encompass over two-fifths and certainly the all important parts of the country from the standpoint of natural resources. If 845 is given a chance, it will work if we proceed the way we have but industry is greatly concerned over the tampering which appears to be taking place in respect to altering or supplementing this act in such a manner that water control passes entirely to the Federal Government.

C. E. SCHWOB: Of course Harry we can't do a thing about that. That is up to the people.

H. GEHM: Of course I understand that, Carl, but the fact remains that every effort is being made to eliminate the States' power in water regulation and control.

C. E. SCHWOB: I think the people here could very well read House of Representative's Bills 4881 and 4882. One of them sets up conservation commissions in 15 river basins in the country and the other sets up the Missouri Valley Authority.

L. COX: What are those resolutions again?

C. E. SCHWOB: H.R. 4881 and 4882. If you people want them Lou can get them and send them out - if you want that type of thing we may be able to get them for you.

L. A. DANSE: We certainly do.

L. COX: I for one would certainly like to see them. Would you like to have a show of hands to see who else would be interested? If you are interested in seeing copies of those House Resolutions will you hold your hand up? Well it looks like the whole Committee would like to have a look at them so we will ask Mr. Warrick to obtain some and distribute them to the Committee members. I think that all that has been said is certainly very pertinent and very timely. The importance of getting something done promptly has perhaps not been stressed enough. In other words if 845 is amended it probably will be because a lot of people think that progress has not been at a fast enough pace.

R. GREEN: I would like to ask Mr. Schwob can 845 as it is now constituted be dove-tailed in any way into interstate compact operations where they could serve water management problems including pollution control?

C. E. SCHWOB: The law contains a section providing for the encouragement of interstate compacts. We work along and try to get interstate compacts to carry on problems in a basin. I'm not sure that I know just what you mean.

R. GREEN: I had reference to funds being made available for studies that I know are made available to municipalities.

C. E. SCHWOB: Funds are made available to our interstate compact agencies now - we give interstate compact agencies grant money.

L. COX: In fact that is where nearly all the money that they have available for grants goes, either to State agencies or to these interstate compacts - as for example the Ohio River Commission is carrying out research supported by funds that have been provided. So has Incodel, so has the Interstate Commission on the Potomac River Basin and I imagine -

C. E. SCHWOB: The same is true for the Tri-State Commission in New York.

L. COX: So those agencies can qualify for these funds for research if they come up with reasonable looking projects and get themselves into planning that has to come before the distribution.

L. COX: Does that answer your question?

R. GREEN: Yes.

L. COX: Are there other comments? We will proceed then to progress reports by industries.

PROGRESS REPORTS BY INDUSTRIES

AUTOMOTIVE - F. C. FLUEGGE

Since the original meeting of the National Technical Task Committee on Industrial Wastes we have been active as an "Advisory Group" of the automotive industry through the facilities of the Automobile Manufacturers Association in trying to carry out the wishes of this Committee.

The Committee has asked for answers to four specific questions; namely,

(1) Sources of information
(2) Treatment and recovery plants in operation
(3) Research projects in progress
(4) Problems facing the industry regarding industrial waste.

Instead of taking a lot of the Committee's time right now we have prepared about sixty copies of our mimeographed report answering the four specific questions in booklet form which I would like to distribute to all of the members of the Committee so they may read them at their leisure. If there are any questions regarding the subject matter in the booklet I will be glad to answer them here at the meeting or at a later time. Inquiries may also be made to the Automobile Manufacturers Association in Detroit for information and explanation.

BEET SUGAR - D. J. RUACH

Well, one of the things that has been of importance during the last months has been the preparation of the Industrial Waste Guide. There is gradual work in the industry itself by individual companies in connection with some of the sugar beet wastes. The main work is being done in the construction of pulp dryers in order to eliminate the silo drainage waste and this has at present been stymied due to the fact that it is very difficult to get the material to build pulp dryers. There are several on order by different companies. Various companies are also beginning the evaporation of the Steffen waste water. Two of these evaporators, I think, have been installed this past year. I think we all know that all of these problems are long-time problems, and if we continue to make some progress, at least we seem to be going in the right direction. The war situation, however, is delaying our industry in making as much progress as we could otherwise, and I imagine is delaying others also.

CANNING - N. H. SANBORN

The advisory group on industrial wastes for the canning industry has not been completely appointed as of the present time. The seasonal nature and wide geographical distribution of the canning industry throughout the United States has made it just a little difficult to get together a proper group for this industry. As the research on cannery wastes which has been published this year there is a report on the disposal of citrus waste by-products at Ontario, California, a very interesting development on the absorption of citrus waste by broad irrigation. There is a report on the treatment of waste water by McNary, Wolford and Patton in "Food Technology." The authors found that citrus waste can be successfully fermented with methane bacteria only after the citrus peel oil is completely removed. The citrus peel oil has an inhibitory effect on anaerobic fermentation. Some of the reports are as yet unpublished but were presented at meetings, notedly the Purdue Industrial Waste Conference. Drake and Bieri reviewed the several methods of irrigation used in Minnesota. The processing of citrus waste was reported by Vincent as a general discussion of existing commercial installations treating citrus wastes for cattle feed or molasses recovery. Dougherty reported on the food canning waste disposal methods of treatment and research at his particular company. There are a good deal of unreported and unpublished investigations that were carried on this year. One of them is an investigation of the lagooning of pea and corn wastes where physical, chemical, bacterial and biological data are being collected over a long range period. Work was done on a modified anaerobic digestion of pea and corn wastes in a full scale treatment plant. Laboratory investigation on plain aeration of apple and corn wastes was undertaken. Bacteriological investigation of lagoon cannery wastes were made to determine the possibility of seeding lagoons with certain organisms to reduce the formation of objectionable odors. That was done in the laboratory and also on small scale pilot tests. There were two investigations of air flotation - one on peach cannery wastes involving a pilot plant study, the second was a full scale commercial treatment unit handling wastes from a number of products. The latter installation just went into operation this fall so there is no time yet for a report on it. Those are some of the investigations with which I am familiar and they indicate that the canning industry as such is spending considerable time on research.

CHEMICAL MANUFACTURING L. COX

Most of you are already fairly well informed concerning the activities of the MCA water pollution abatement committee. That committee has as its prime purpose exchange of technical information within the industry and also the development of an attitude which will arouse greater interest in the problems and the needs for solving them. There are several ways in which this information has been exchanged, perhaps to date the more important one has been the organization of some,7 industry conferences to which the representatives from all member companies have been invited. Those meetings have run anywhere from 140 to as high as 250 industrial representatives and they have been very good in that the latest information on methods for treatment and disposal have been presented and ideas exchanged there. Another method that is in use is preparation of what we call industrial waste treatment manuals. Now they are a bit different from what you refer to as the waste treatment guide because of the fact that the waste from no two plants in chemical industry are alike. In fact there are few cases where two plants operated by the same company have the same kind of wastes. An overall guide would be useless, so what we have done is break down wastes into several types as for example acid and alkaline wastes, soluble organic wastes, some several others and have embarked on the task of writing brief manuals concerning the treatment of each type of wastes. So far, as you know, there has been one finished on the general approach to the problem; one finished on handling of insoluble or undissolved substances, and I think that the committee is now rather well along on the one that has to do with the treatment of acid and alkaline wastes. These pamphlets as they are completed are available to anybody who wants to write to the MCA Secretary, M. F. Crass, Jr., 246 Woodward Building, Washington, D. C., at a cost I think of around 20¢ a copy. The committee is made up of some 14 or 15 people from the chemical industry - has been very active committee for a number of years and indications are it will continue to do a lot of good work in that industry. The results of their work will be available to this Committee through Mr. Tom Powers.

COAL H.J. ROSE

As Secretary Warrick indicated Mr. Hebley has submitted a report to the mineral products task group. The problems of the industry as they affect the water supply can be divided into several parts, one is drainage water from mines. The water that issues from mines varies all the way from a good quality potable water that can be used for city water supply to waters that are acidic because they contain iron and aluminum sulphate leached out of the strata. There is scientific research in progress to determine the methods in which these products are leached out with a view to establishing practical methods of control. There is also chemical engineering research on possible methods of treatment. It turns out that it is quite a big problem.

The second major problem is suspended solids from coal washery wastes and I can report that a great deal of progress has been made there. Commercial equipment has been developed and processes worked out for sedimentation and clarification methods of storing the fines so they won't get into streams, and methods of cleaning and transporting them, so that they can be sold to some industry. Many commercial installations are in use in actual scale or pilot scale.

The third problem is the storage of refuse solids in the mines or washeries, that is the large size rock and the shale and the other material that cannot be marketed. One problem there is the control of erosion and leaching from such materials so that the products will not get into the streams. In that connection there have been a good many places where full scale testing of ideas and methods of storing, banking, tamping, and all the methods of doing that dependent on local topography are in use.

The fourth problem is the rehabilitation of land from surface mining or from stripping. That is particularly active as national committees are very busy cooperating with foresters. I am very happy to report that the committee states that millions of trees have been planted on those banks and they have worked out the details of the type of forest trees that are appropriate for each type of bank. In a number of cases they are planted to storage crops and blooded livestock have been grazed on these very successfully. The recreational facilities have been developed. Some stripping operations leave good size lakes and those have been planted with game fish. They are building boys' camps there and selling property as summer cottages.

One problem that affects the coal industry as it does many others represented here is the size of the industry. There are actually many thousands of operating mines in nearly 30 States and there are many hundreds of coal fields mined. Solutions for the problem have to be worked out in accordance with local conditions. All I need to say is that it is going on very actively. There are scores of publications on the subject. This is a publication of one State on just one phase of one kind of mining. The rehabilitation of land stripped for coal in Ohio. This is a sample of the good work that is being done and the practical solution of those problems under the many conditions that exist.

CORN H. PRENTICE

Mr. Chairman, Gentlemen; the problems of the corn refining industry by comparison with other great industries of the United States are very simple. Nothing I have heard since this Committee was formed has changed my original concept that the problems of our industry in disposing of industrial wastes are economic and not technical. We do have some technical problems in the reduction of the cost of treating. That is where our major interest at the present time lies. However, we feel that if the people of the United States wish to clean up industrial wastes, there must be some lawful provision as to accelerated tax write offs. We have done quite a bit in our industry as a result of this Committee's work by funneling and channeling information of all types to members of our plant management committee, who have control of this problem of industrial waste disposal. Information on water supplies and water resources and reports from other industries which we feel are of significant help to our people have been constantly screened out to all our companies. Therefore, I think they are well posted. I have with me, fortunately, a consultant associated with the American Maize Products Company, who has done a great deal in recent months in disposing of industrial wastes from their corn refinery plant. This gentlemen has given lectures at Purdue Conferences and has some articles coming out soon in published form. I feel a few words from him on our present, immediate tasks in reducing the cost of treatment will be of interest to the group. Dr. McIntosh, will you supplement my brief talk?

DR. MCINTOSH: The method that we have used at our plant is applicable to the industry as a whole. In fact, we have carried on to a little more completion the work which has been done by the other members of our industry. Essentially, what we did was to set up a program to study the sources and loading values of the wastes. Since we were not sewage engineers, we decided we should eliminate the wastes within the plant and not try to treat the effluent leaving the plant. We accomplished our goal by the following means:

1. An intense educational program which covered everyone from the laborers to top management.
2. Re-use of all process waters possible.
3. Expenditure of roughly $850,000 for new equipment and remodeling of existing equipment.
4. Close cooperation with the State and municipal authorities.

We reduced our plant loadings from 350,000 population equivalents to 28,000. On the basis of our daily grind, this means a reduction from 10 population equivalents per bushel of corn to 0.7 per bushel. We believe we can reduce this to 0.5 P.E. per bushel.

In making this reduction in our waste loadings, we have raised our overall yield about 1%. On the basis of 40,000 bushels of corn processed per day, this means an annual savings of approximately $175,000.

L. COX: Thank you very much Dr. McIntosh. Incidentally, that parallels experience that many of us have had already -- that the place for a start is at the waste producing operation whatever it may be. Very often the losses can be greatly reduced and make not only the reduction you want in amount of pollution, but at the same time recover valuable materials. You'll note the values he gave would be a good deal better than you could have obtained had you put full scale treatment on the effluent from the plant. You hope to get about 85 percent out of such a treatment method or treatment plant, and I judge you were something over 90 percent. That's a real success story.

DAIRY F. MCKEE

The task committee on dairy waste disposal has been quite active since the last meeting. We have gone forward with the revision of the guide on dairy wastes, and that is now ready for submission to the Public Health Service. We have also prepared bibliographies of the various publications and various talks which members of the task committee on dairy wastes have made on this problem of waste saving and waste treatment in the dairy industry. I have copies of these here, which I will pass around to you. We also have distributed rather widely this bulletin on waste prevention in the dairy industry, worked up in our task committee. It has been passed out to all the regular trade associations. However, we in the dairy industry do have a problem in that many of the dairy plants are very small operators and not members of trade associations. Those people are very hard to reach. We have hopes that the State health department people will take up this bulletin or the information in it and pass it around to many people we have not been able to reach. We have distributed this bulletin through all the regulatory people, and at the present time it is just about out of print. We intend to reprint the bulletin but first we will circularize the State agencies and ask for comments as to how they can use this bulletin in their work. When we get down to the local problems, we will then be in a position to know how many bulletins we will want printed. The committee has also accomplished some additional research at the Department of Agriculture Regional Research Laboratory in Philadelphia. Many of you are probably familiar with the work that Dr. Hoover has done. It has all been published in the Sewage and Industrial Wastes Journal. He is continuing his work on some other phases of the problem, and we expect further reports which will better define the type of treatment that he is working on. As far as plant operations are concerned, we have found that the dairy plants can be buttoned up, so to speak, to materially reduce the amount of milk lost during processing operations. One of our member committees, the Dairy Industry Supply Association, has done a lot of research on operations of milk can washing. They have found that up to 75% of the milk that is usually lost in washing operations can be saved by the redesign of the milk can washing. We hope that we will be able to promote the installation of those milk can washers and thus eliminate one of the major problems of pollution in the dairy industry. Another thing that has happened is that the processing of by-products has become more universal. We now believe that practically all of the by-products such as whey, buttermilk and separated milk that are within a convenient distance of a processing plant are now being processed. We realize there are individual plants that are so located geographically that it is not economically feasible to haul the by-products and evaporate them down to dryness for animal food, or for any other type of product. That is still a problem, but we do feel that those plants in areas in which there is a possibility for operation of large by-product plants are being well taken care of. I'd like to pass these bulletins out for your information. This is a rather imposing list of speeches and talks that have been given in waste saving on the dairy industry. One of our members made the remark that nobody in the dairy industry can say that we didn't tell them about waste saving.

DISTILLING A. J. DAVIDSON

For the year ending October 1, 1951, the distilling industry recovered 634,000 tons of pollutional material. This material was recovered as dried grains and marketed as cattle, hog, and poultry food containing increased vitamin and other values from the original grain from which it was processed. Of course, all of this material is recovered in the dry house operation, which involves screening, pressing, evaporation, and drying of the stillage from which the alcohol has been extracted.

The dry house process, it has been estimated, is utilized by approximately 85% of the industry for recovery of these former waste materials, while practically all of the remainder of the industry feeds the waste material in the wet form to live stock.

The Distillers Feed Research Council, which I represent, has a present budget of approximately $85,000 for various research projects dealing with further utilization of distillers dried feeds, plus projects for new feeding tests, better quality and operations control, etc. It is of interest to note that one of the present twenty-three active research projects deals with the usage of distillers dried solubles as fish food. This project has been under way for the past two years and has demonstrated that the solubles can be used for as much as 12% of the total ration of hatchery trout. This type ration has cut cost of trout feeding and has also proved effective in combatting the trout disease known as "Blue Slime." Thirty tons of solubles were sold last year for this purpose.

The DFRC has a committee in action now re-surveying the industry as to the status of their wastes. This is to bring present figures up-to-date.

Another DFRC committee is being organized for the purpose of improving dry house operations. This committee will seek to facilitate an exchange of information on operations and improved methods including various individual research projects.

It has been found that some distillers with dry houses may need further waste treatment where small streams are involved and five high rate trickling filter plants for these remaining wastes have been completed in the past five years. Also one new development in rapid anaerobic digestion of these wastes has been constructed at a small distillery.

Laboratory research work is continuing at major distillers. This work involves further research in anaerobic digestion, activated sludge, and the high rate trickling filter.

An industry committee, in cooperation with the Ohio River Valley Water Sanitation Commission, is also preparing a waste guide. In this project a complete booklet on sampling, analyzing, and treating distilling waste is planned. The various distillers are preparing different sections of the booklet which will be combined for the complete guide.

In summarizing, it might be said that the methods of recovery and treatment of distillery wastes are now fairly well-known and have been applied by more than 97% of the industry. The present program in research is aimed at improving these processes and making them more economical.

L. COX: Your report containing a figure of 97 percent of the industry is one which I suspect cannot be matched anywhere else. Of course, I suppose one of the secrets to it is that you boys discovered something that was economically feasible. I hope that many others of the same sort will come along as this research work continues.

ELECTROPLATING C. F. GURNHAM

I can say impromptu that research is going on. The American Electroplators Society has a project, started in 1946 or 1947, at Yale University and has prepared a very extensive bibliography and critical review of the literature on plating wastes, and they have gone on to research work on cyanide wastes. The Society has also cooperated with the Ohio Valley Group. There have been some publications, at least one which has been distributed to this group.

L. COX: Thank you, Dr. Curnham. Incidentally, that publication which the Electroplating Committee of the Ohio River Valley Sanitation Commission prepared that was distributed to this Committee has some very pertinent information about re-use and recovery, and suggested methods than can well be followed in many other operations.

FERMENTATION - C. S. BORUFF

Actions within the fermentation industry, which includes all these fermentations other than the distilling industry, that is, the antibiotics, wine, yeast, etc., pretty well follow the same lines as already covered by Mr. Davidson for the distillers. In the main, expansion or new installations are including recovery and/or waste treatment, which I think is significant when you compare these new ones with the old ones that have been operating for a number of years without treatment. In the new installations, or expansion of existing installations, they are putting in feed by-product vitamin recovery and in some cases where the by-products are not worthy of recovery or the market has not been developed as of yet, they are including waste treatment insofar as critical materials are available. Considerable research is being carried out in these various fermentation fields, in the field of waste recovery and treatment. I have prepared the following very brief but somewhat detailed report on a number of the accomplishments in the fermentation industry during the past year.

FERMENTATION INDUSTRIES

The fermentation industries, in general, are recovering and marketing much of their so-called wastes as poultry and livestock feeds. Non-marketable wastes are being disposed of and where local conditions require final effluent treatment prior to final disposal, such treatment plants have and are being constructed. Waste disposal studies are being actively pursued by all segments of the fermentation industry. It is interesting to note that most plant expansion and new plant projects, in line with modern practice, include waste treatment as part of the original plans. Some of the older and smaller plants still have waste disposal problems.

The following summarize recent specific activities in some of the fermentation industries.

ANTIBIOTIC WASTES.

Two-year operations of a new and complete waste treatment plant at the Kalamazoo, Michigan plant of the Upjohn Company will be reported on soon by Hurwitz, Edmondson and Clarke in Water Works and Sewage Journal. The plant is handling around 700,000 g.p.d. of penicillin, streptomycin and sanitary wastes possessing a daily B.O.D. of more than 2,700 lbs. B.O.D. removal averages 90%. Treatment facilities include holding tanks, 4-hour aeration tank to remove solvents, sedimentation, digestion, trickling filters with back-circulation, final sedimentation, and chlorination.

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The character and intermediate treatment of aureomycin wastes has been reported on by members of Lederle Laboratories. Partial treatment consists of aeration, sedimentation, and trickling filters.

Ref:-Brown, J.M., Sewage & Ind. Wastes, 23,1017 (1951)

Brown, J.M., and Niedercorn, J.G., Abst. of Paper No. 27, Div. of Water, Sewage & San. Chem., New York A.C.S. meeting, September 1951.

Mohlman has also reported on each of the above plants.

Ref:-Mohlman, F. W., Abst. of Paper No. 11, Section 1, Air & Stream Pollution, XII Int. Congress of Pure & Applied Chem., New York, September 1951.

WINE AND BRANDY WASTES

The Italian-Swiss Colony Winery at Fresno, California, in September 1951 placed into operation a waste disposal plant costing $90,000. Rotating screens remove pomace and other screenable solids which are then pressed and used as fertilizer. The screened liquid is lime treated; the sludge is dried in pits and the treated liquid used for irrigation.

The Wine Institute reports a contract has been made with the University of California for pilot scale testing of winery waste treatment by biofiltration and chemicals.

BREWERY WASTES.

This past year a number of reports have been published on the brewery waste treatment plant of the Lucky Lager Brewing Company in Azusa, California. All recoverable solids are segregated and utilized or removed for safe disposal. Uncontaminated waters flow into a percolation basin. All other wastes, amounting to about 2,000,000 gal./wk., are treated. Sedimentation, digestion and two-stage biofiltration with back-circulation is practiced. Ninety percent of the final effluent is used for irrigation; ten percent seeps from spreading ponds to the underground water table. B.O.D. removal runs from 84 to 88 percent. The plant was completed in 1948-49 at a cost of $225,000.

Ref:-Schneider, R., Sewage & Ind. Wastes, 22,1307 (1950)

Havighorst, C. R., Food Eng., 23, No. 6, 142 (1951)

Guymon, B. E., Eng. News Rec., 146, No. 17,50 (1951)

DISTILLERS WASTES.

Boruff has reported on intra-plant source and potency as well as total plant wastes from a distillery practicing complete stillage recovery to distillers feeds and compared his data with those of previous reports. With complete stillage recovery the population equivalent of a distillery will run from 1 to 3 per bushel of grain mashed.

Ref:-Abst. Paper No. 10, Section 1, Air and
Stream Pollution, XII Int. Congress of
Pure & Applied Chem., New York, September 1951.

Paper to be published by Ind. Eng. Chem. as
part of waste symposium review.

L. COX: Thank you very much, Dr. Boruff. Your point about new installations is certainly a very good one, and I know that many companies take the same view that either new plants or expansions of existing plants must carry with them the necessary facilities for waste treatment. That, of course, is a matter that is of interest to all State agencies. Many of them are so organized that they seek to prevent new pollution while at the same time reducing existing pollution. The only way you can do that is to take the step that your industry is taking, namely, to include the necessary facilities right at the time the plant is built.

FISHERIES - MR. WALLER

I would like to take a minute to report on the progress we are making, and am very happy to say that the fish processing industry has made substantial improvement for the elimination of some of its waste materials. One of our most perplexing problems was the disposition of a press water we had which resulted in the recovery of fish oil. There has recently been developed a method whereby through evaporation we recover a valuable animal - poultry feed ingredient which is high in the water soluble vitamins. It has made it possible to almost eliminate that item as a source of pollution. These installations are quite generally being installed at all of the processing plants. We have prepared a report to illustrate this development. I am not going to burden you with it today. We are duplicating it, so the Secretary can circulate to those who are interested.

FROZEN FOODS - S. E. SMITH

Mr. Chairman, perhaps you will notice that I am sitting next to Mr. Sanborn here, and that sort of typifies the relationship that exists between frozen foods and canned foods. Our problems of waste disposal in the frozen food industry are not markedly different from those in the canning industry, except that it has been found that where we convert to freezing much more water is used in processing which magnifies the problem. Frozen food packers have no organization through which the problems of waste disposal are being studied that I know of, but each individual packer I believe is aware of his own problems and intends to work out his own solutions.

GAS MANUFACTURE - J. S. SETCHELL

I don't have very much to report for the gas industry. We have an active committee on plant waste disposal which is charged with the responsibility of working on these things. One of their activities has been providing speakers before conferences of the entire industry. Mr. Warrick made such a speech about a year ago, and I know that the information that was conveyed to those people was very helpful to them. We also have a committee on tar dehydration. That committee is somewhat related to waste disposal. Our subcommittee on plant waste disposal is also working today on the question of air pollution, which I don't believe is of direct concern to this Committee, but it is of concern to the industry. Perhaps the biggest change in our industry that affects this problem is the ever-growing swing toward natural gas which has resulted in many gas manufacturing plants either being taken out of service altogether, or being put on a peak load and standby basis. That has resulted in a good many cases, I think, in substantial reduction and, of course, the industry is very conscious of this, particularly where their plants are located in the vicinity of waters that are good to start with where the gas plants make every effort to avoid being the cause of pollution.

IRON AND STEEL - R. HOAK

A brief report on our principal current research project has been given to Lee Burroughs, who will include it in his report for our industry group. It involves treatment of waste pickle liquor with raw coke oven gas to do a number of things. If all of these things can be done and there are some indications that they can be, it will be an extremely useful process and generally will be applicable to the solution of the spent pickle liquor problem at many medium size integrated mills. In the first place, it will substitute the sulphate in the pickle liquor for the fresh acid that is now being purchased to produce ammonium sulphate, thereby assisting in relieving the sulphur situation. In the second place, we have shown that hydrogen sulphide can be scrubbed out of coke oven gas substantially completely with pickle liquor, and that we are able to recover practically all of that sulphur as elemental sulphur. So far we have produced material with a purity of 92 plus percent, and inasmuch as the principal contaminent is iron oxide, it would be easy to upgrade that material into a relatively pure brimstone. Another recovery possibility is removal of the cyanides in the gas as ferrocyanides which can be leached from the resultant sludge and recovered either as sodium ferrocyanide or calcium ferrocyanide - useful materials in the pigment industry. There is also an indication that we may be able to recover pyridine -- that in a couple of words describes the process to which we are giving all our attention and have been for the past six or eight months. Individual companies in the industry are carrying on various research projects dealing with spent liquor treatment and disposal. In one instance a study has been undertaken on the use of granulated blast furnace slag to neutralize pickle liquor. It appears that this will be an economical procedure for many mills. One interesting disposal technique I think you might like to know about involves discharging the spent liquor on molten blast furnace slag. In the single instance where I know this is being practiced, about 20,000 gallons of pickle liquor can be evaporated and almost completely decomposed in about two hours. There is no aerial nuisance, and that is a rather curious situation in this case. When preliminary trials were made using plain sulphate liquor there was a somewhat objectionable odor. However, the liquor that is now being treated contains not only sulphate liquor but the liquor from stainless steel pickling, which contains nitric and hydrofluoric acids; with this mixture there is no aerial nuisance whatever. I have stood in the steam rising from the hot slag with no discomfort. The area where this is being done has a very lush growth of vegetation. That is a method for handling pickling liquor that can be perhaps used advantageously in various instances. I think it will be of interest to you to know that at the request of a committee of the Ohio River Valley Water Sanitation Commission, I have prepared a manual of pickle liquor utilization and disposal that will be published next spring. It is reasonably comprehensive and is aimed principally at administrative and technical personnel.

LUMBER - H. B. MCKEAN

Gentlemen, I purposely took a seat down here at the end of the table because the lumber industry problems of waste disposal are very small with respect to the work that this Committee is interested in accomplishing. We have waste which we prefer to call a wood residue, but it isn't being dumped into streams. In some areas it may be polluting atmosphere but only to a limited extent. We only have the problem of utilizing a material which chemically is exactly the same thing that is put into boards, furniture and what not.

I thought it might be of some interest to emphasize the fact that the lumber industry, as well as some of the allied industries, is working rather strongly to try to find a means of utilizing wood residues, but frequently the whole thing depends on economics. In Los Angeles there is a firm that is collecting sawdust and shavings from a variety of planing mills and putting it into products, such as roofing felts, floor cleaning compounds as well as fur and metal instrument cleaning and soil improver. Further up the West coast, a redwood lumber company has done a considerable amount of work in utilizing bark. Some of you may not know that the bark on the redwood tree may average from six to twelve inches in thickness, so that it is a tremendous utilization problem. Further up the coast the Weyerhauser Timber Company is also working on bark. This time Douglas fir with a number of different products. Perhaps the principal one is cork. It is in commercial use now. Another product that they are producing is a wax that may displace or substitute beeswax.

In the Lake States area some of the major research activities are the development of hard boards from wood wastes. Incidentally, this is probably one of the major fields in which current or recent production is started. The Curtis woodworking people in Davenport and the Rock Island millwork people in Rock Island both have plants that produce hardboard by hot-pressing combinations of wood waste and resins.

Our own work, I think, will be of some interest to you because it relates directly to some of the problems that are being discussed, or will be discussed. In the lumber industry laboratory which is operated by an affiliate of the National Manufacturing Association, we have patents on a process whereby we can very economically extract silver from waste photographic solutions. Work is going ahead and we are trying to get this in commercial use. A similar process has been conceived as a means of taking small amounts of phenols from waste liquors. This phenol recovery has an interesting possibility because the absorbing medium with the absorbed phenol in itself might be used as a plastic. Thus it is not only a potential method of utilizing lignin to eliminate sources of stream pollution but also may develop a useful product. Probably the item for which we have greatest prospects at the moment is the means of converting sawdust into a soil improver. At the moment we have patents on this process, seven licenses in this country, one in Canada, and one in Mexico to provide a material which when added to the soil will increase plant growth. Experiments all over the country have given satisfactory results. It might be that within a couple of years we will actually be producing it in large quantities.

MANUFACTURING - R. R. GREEN

The thing I would like to start out with is to say that the National Association of Manufacturers and the general manufacturing groups as a rule universally, I believe, do not have staffs of technicians who are directly engaged in the study of specific water pollution control, or pollution abatement problems. The organization which I represent does not have such a staff of technicians, nor do the State groups who are affiliated with this manufacturing organization. None of those groups have technical staffs. Rather, the interests of such groups as are found in the State levels and the National levels, the National Association of Manufacturers, are interested more in the general problem of water conservation of which pollution abatement is a part. Our activities and the activities of similar organizations are directed toward general educational programs. The vast variety of pollution problems to be dealt with so far have defied any direct approach to individual problems. One of the principal activities of our organization in that direction was the publication of "Water in Industry" last year, which attempted to catalog some of the water use problems in industry and to outline the National problem of water pollution. We hope to follow this study up later on with perhaps a more detailed approach than we took in this one toward the question of pollution abatement as it is concerned with manufacturing.

MEAT - M. D. SANDERS

Mr. Warrick mentioned in his Secretary's report the receipt of the revision of the industrial waste guide to the meat industry prepared by the American Meat Institute's Committee on Waste Disposal. The committee enjoyed performing this task.

The committee has been instrumental in distributing throughout the member companies information on waste disposal. I think the most valuable bit of information that we have caused to be distributed during the past year, was the very complete and extensive bibliography on meat packing wastes and meat packing by-products which was developed by Mr. Gold of the University of Tennessee.

The American Meat Institute has two regular meetings every year; one, the Institute meeting in September and the other the technical conference of the American Meat Institute Foundation in the spring; and at those meetings of late years, papers relating to waste disposal have always been scheduled. At the fall meeting this year Dr. Gross of John Morrell Company presented a very thorough treatment of the problem of grease recovery which bears, of course, directly on pollution abatement and waste treatment. Last spring, Mr. Fullen of the Hormel Company presented the results of his three years' work on anaerobic digestion of meat packing wastes which embodied an entirely new viewpoint in the field of biological treatment of food wastes. The committee is interested in the possibilities of this process Mr. Fullen has developed and also the possibilities of the process of grease recovery resulting from the introduction of air under pressure in flotation basin. I believe this is about all we have to report.

MINING OTHER THAN IRON AND COAL - H. W. MARSH

Mr. Chairman, my good friend Mr. Warrick told me what I was to cover in this report. If I were to cover the mining industry I would have to go back 100 years to bring you fellows up-to-date. The wastes of the mining industry have many, many meanings depending on the price of metals. For example, when Utah copper operations first started it was necessary to have 2% copper ore, two percent ore meant that it took about 40 pounds of copper per ton of ore to make a profit. Today that same Company is mining profitably 0.4 of one percent copper ore returning eight pounds of copper per ton of ore. The same situation applies to all other mining operations. The price of metal determines the minimum limits on which profitable mining operations can be carried on.

In the great Coeur d'Alene Mining District of Idaho, which is now in its 65th year of operation, the ore dressing practice back in 1885 was far different than the present day ore dressing methods, in the early days coarse crushing followed by jigs, rolls and vanner tables making a recovery from 45 to 70% concentrates depending largely on the kind of ore that had to be concentrated. Lead, silver, zinc, ores that had a high zinc content, the zinc was sloughed to waste as much as possible up until 1916. With the coming of differential flotation and zinc metals in strong demand and being paid for at a price over lead, every effort was being made to save all minerals possible. The mining industry has come a long ways in the past 30 years in improving metals recovery and the elimination of minerals in the waste rock that is discarded. The Bunker Hill & Sullivan Mining and Concentrating Company is now recovering in their smelter every element in the ores that is smelted but sulphur, as soon as necessary steel and equipment are available they plan to make elemental sulphur then making a complete recovery of every element that goes into the furnaces. When a miner goes underground to break ore by drilling and blasting, two products are broken, ore and waste. The waste is left underground where possible for stope filling for safety purposes where the ore has been taken out and a large cavity remains open. The ore which runs anywhere from 15 to 75% metal is sent to concentrating mills to be upgraded and separated into the various elements contained; after the ore is taken out, the waste goes to discard. In the Engineering and Mining Journal of September, 1951 there is a very good article on sand filling methods in stope filling. This procedure is being developed and more and more with many advantages accruing in its favor and also eliminating some of the sands that have been discarded to streams. We will not be able to put all our sands back underground because of many impossible conditions. There is a slight turbidity in the water of the Coeur d'Alene River below the harbor dredge which is going to be hard to clear up. No harmful chemicals or minerals are in this water. The newer processes and additions to the concentration of ore is the sink float process. In the float machine is placed a media of the proper specific gravity that will float the waste particles and leave the mineral behind for fine grinding to feed the flotation machines. The waste rock from the sink float machine is approximately one inch particles which make for an ideal road surfacing railroad balast, and a clean aggregate for concrete work. We are making definite strides in improvement of our streams. I don't know if the general public will believe it but we really are.

NON-FERROUS METALS - R. K. STROUP

Non-ferrous metals in general and the zinc and lead mining and smelting industry with which I am connected have two major problems concerning stream pollution. First is the treatment of large volumes of mine drainage waters to a point which will not endanger stream life, and second, the impounding of the waste products from milling operations to keep them out of the drainage systems. While neither of these is solved to perfection, we locally, at least, keep them under control.

PETROLEUM - L. C. BURROUGHS

At previous meetings of this Committee I have told you of the work we have been doing over the last 25 years. This work is lodged mainly in the American Petroleum Institute's Committee on Disposal of Refinery Wastes but not 100 percent. The Western Oil and Gas Association has done some work in the past and during the past year or so the Western Petroleum Refiner's Association has made abstracts of the various State laws having to do with disposal of wastes--so, these two other industry associations have also done some work along this line. In May at the API Division of Refining meeting in Tulsa, we had a rather interesting session in which a number of papers were presented on various aspects of refinery waste disposal. A three-year research project on an oil-water separator design at the University of Wisconsin has been completed recently and a repot has been written on this matter. The report and the information developed will serve as the basis of a revised oil-water separator design, which is now being developed. The new design with up-to-date supplementary information will be presented in the new edition of Volume 1 of the API "Manual on Disposal of Refinery Wastes" which should be off the press shortly after the first of the year. About a month ago the second edition of the Volume III of the Manual entitled "Chemical Wastes" was published. This manual contains some rather useful information interesting to others, as those outside of the oil industry also have troubles in connection with disposal of waste chemicals. As you know, petroleum refining is largely a chemical process today, and we have about the same wastes to dispose of as the chemical industry. The subjects of the chapters are "Properties of Chemical Wastes," "Sources of Chemical Wastes," "Effects of Pollution of Surface Water by Chemical Wastes," "Recommended Practices and Methods and Devices for Treatment and Control of Chemical Wastes." This manual may be purchased from the American Petroleum Institute, 50 West 50th Street, New York, for $1.50. I am sorry that I don't have enough copies of it to pass one out to everyone here.

Satisfactory progress has been made toward completing other sections of the API Waste Disposal Manual. It is expected that Volume II on "Waste, Gas and Dust" will be published early in 1952. At the same time we hope to have Volume IV on "Water Test Methods" and Volume V on "Air Test Methods" also off the presses -- so, altogether we will have five separate books on waste disposal subjects, and I think they will be generally interesting to this group. They can all be purchased from the American Petroleum Institute, as they become available.

A new research project will be undertaken soon at the Academy of Natural Sciences in Philadelphia, to develop and calibrate a trap, which it is hoped will be capable of indicating the degree of pollution in surface waters. Forms of aquatic life normally found in the waters under test will be used as indicators in this trap. Two meetings of the API committee and its various subcommittees have been held since last January, these meeting being attended by about 30 or 40 representatives of oil companies.

Units of the oil industry are installing much new equipment to maintain satisfactory waste water quality and to effect any improvements that are necessary. Plants for flocculation treatment of waste water have been installed and are under construction. A large refinery is at present building facilities for biotreatment of waste waters. Equipment for reducing discharge of acids, alkalis, oxygen consumers, taste and odor compounds, etc. is being installed throughout the oil industry. The committee is going ahead as we have in the past, as a matter of fact we are probably more active today than we ever have been and have a larger committee.

POULTRY - A.J. STEFFEN

The poultry industry as most of you know consists of small plants, mostly killing operations, poultry processing plants and egg breaking plants. Most of them are located in towns where they discharge the wastes directly to the sewers. Some of those that do not have had some difficulty with stream pollution problems. A number of the small concerns that make up the poultry and egg business have taken an interest in waste treatment and waste disposal to the extent of installing mechanical screens and treatment plants. The Institute of American Poultry Industries which I am representing here in Miss Wasmuth's absence, has, in the past, considered waste disposal and stream pollution control as part of the general subject of plant sanitation, and as such has emphasized waste saving. The Institute, however, intends to include waste treatment and waste saving on the agenda of the next Fact-finding Conference in Kansas City which is an annual event sponsored by the Institute and I think much will come of that. The Institute does cover waste saving and general waste utilization in sanitation short courses which are held several times a year.

POWER - J. H. JONES

Mr. Chairman, I came out here to be indoctrinated and I think my best contribution along that line would be to sit down. Before I do I would like to say that our industry, the electrical industry, does have a real stake in what we are talking about here, not only because we use a trementouds amount of water but equally important because an electric company, an individual electric company, is peculiar in one respect. It's wedded to the area it serves and can't move. Consequently, what happens in that area - stream pollution and most anything else becomes our problem, a very real problem. I want you to know I hope we can carry our weight on your Committee and you are doing a swell job here today in getting me indoctrinated. Thank you.

PULP, PAPER, AND PAPERBOARD - H. GEHM

It's customary for the pulp and paper industry to present our report in the form of the annual report of the National Council for Stream Improvement which you are all supposed to receive. If we have slipped up anywhere please let me know. Other activities of the industry are contained in the annual review of the literature prepared by ourselves for the Federation of Sewage and Industrial Waste Associations together with the card index which will presently be prepared by Mr. Warrick under the sponsorship of this Committee. The latter contains reference to work done by individual companies on this problem. I would like to speak a few minutes however on our immediately pressing and most interesting problems. The trend in the pulp and paper industry for many years has been to remove the usable fiber of what we commonly refer to as savealls of one kind or another. When Mr. Warrick was with the Wisconsin State Board of Health each year tabulations were made of the fiber losses by all mills in that State. I think that this tabulation epitomizes the trend throughout the industry. Each year fiber losses have been lower as we get better equipment and improved machinery. Savealls are available which are actually clarifiers in the sense that they do close to a 100% job. We are coming to the end of the rope on that problem and there is little reason today why this fiber should not be recovered from the mill effluent. The next logical step then is to remove other materials, particularly suspended matter. In the case of some operations a lot of the suspended matter is not usable in the sheet. This is particularly the case as quality standards continue to rise, brightness has to be high. In general cleanliness must meet very high standards. Therefore it is impossible to return some of those materials. In other cases where waste paper is used, by necessity some of the material must be lost in the process. The greatest progress I think in the last five years in the industry in the matter of actual waste abatement has been the removal and disposal of those unusable residues. In one State in particular I think I am safe in stating that we are approaching the point where close to 75% of these materials are now removed from the waste. This is also of interest from the standpoint of the necessity for doing the job. The public notices sludge banks, floating suspended matter and high turbidity probably more than anything else so that often we find that when those are removed further treatment requirements are rather small ones or may not exist at all.

Secondly, I would like to stress one of the big improvements that has come about in the industry of an in plant nature. This improvement arises from the fact that most kraft mills or older kraft mills have been practically rebuilt since the war. New kraft mills have been built and recovery systems erected in such a manner that the losses are extremely small as compared to those formerly discharged, hence the pollution problem has been greatly reduced. Recovery systems now, that is recovery of wood substances in the form of heat and chemicals, now exceeds in some cases 98% in new mills and it has been brought up over the 95% level for the older kraft mills. Another interesting advance has been semi-chemical pulping. By that I mean the treatment of wood chips with dilute solutions of chemicals. Such treatment was first used for producing coarse grades of paperboard and it was found that yields were very high. That is yields of wood substance converted to paper material bordered on the figure of 70%, against former figures of 45 and 50% at best. This was because the lignins and hemi-celluloses are included in the sheet. In recent years we have learned how to use semi-chemical pulp in other types of sheet, and learned how to bleach it. That means that what was formerly waste now goes into the sheet. Peculiarly enough in some cases application of this process has caused difficult problems. In others, however, it has reduced pollutional loads to a large degree. Mills that formerly cooked by the straight acid sulfite method when converted to semi-chemical will have reduced their wastes by 75%. The use of this process also in combination with kraft allows a high reduction because the kraft recovery system can receive the spent cooking liquors from semi-chemical process. However, this process has opened the door to the erection of small unit mills, which to be practical at present must find some way of getting rid of their wastes. The development of recovery systems for these has gone forward. The treatment has been explored both with and without sanitary sewage to some degree. It appears, however, that a recovery system will have to be extraordinarily efficient to meet the demands of these mills. However, it also seems to be that these mills will not remain very long. As soon as we get to a larger size, recovery will be almost mandatory. I say that because the wood supply is there to support much larger manufacturing units than are presently being operated.

I would like to say a word here too if I may about our interest in the Public Health Service program. First, the research program. I see by the agenda that work is being done on the biochemical oxygen demand or the aerobic oxidation of lignin. We are naturally interested in that because our big waste material is lignin. I think that this work points out one weakness of our committee in that we didn't get together more with the Public Health Service people prior to the installation of this project. We have I know in our own files a good deal of material which I don't believe has been made available to the Service and which we would be glad to give them. Secondly, I think that it has been pretty well established in the literature that the lignins as a whole decompose but very slowly since they are very similar or make up a great part of the humus material in decomposition of organic matter. It would be very helpful if we could all talk over some of these basic projects before they are installed, at least those we are immediately concerned with. We are also greatly interested in the work on oxidation of pento-sugars and of furfural and similar border-like compounds. In our work we repeatedly run into discrepancies and difficulties arising through analytical methods as is the case in any kind of technical work. Dr. Ruchhoft is making an outstanding contribution in his work on adsorption of these materials on carbon and their separation for analysis in more concentrated form. Too often we just could not get hold of the substances of interest in sufficient concentration to d o anything with them. I feel very much that this is an outstanding contribution. It may throw some light on some of these nebulous problems that we have occasionally such as the fish taste. This work will be in the future most helpful as is true of all the analytical testing and research which the Public Health Service has installed. With respect to the field work, we have made a good deal of use ourselves of the bulletins which have been published on that. Hayse Black's paper on flow measure and sampling was so much better than anything we had in the industry, that we distributed that with the Service's permission in the form of a technical bulletin which I feel certain will be most useful. We are also interested in following the work on the preparation of the industrial waste guides. The kraft mill work has proceeded at one mill and I can tell this group that the report as rendered was handled in a proper manner. We are happy about the way that work is proceeding and I hope we can continue on this basis. Thank you very much.

RAILROADS - W. A. HAZLETT

Chairman and Gentlemen. I am in the office of sanitation research of the Association of American Railroads. You may wonder how I sit so peacefully here with Mr. Teal whom you recognize as a member of the C. & O. Railroad which was Mr. R. R. Young's organization. Mr. Young, of course, was our arch enemy. However, the C. & O. is now back in the Association of American Railroads and at no time were its activities curtailed more than 20 or 30% in the Association.

The railroads are what I consider a dry industry and with the advent of the diesel locomotives the industries becoming drier all the time. Some 70% of all our main passenger trains are hauled by diesel locomotives so there is a great reduction in the amount of water required. I know of one railroad which uses only 1/7th of the water it used before the diesels came along at one of their plants. That I think is rather typical of the industry. When the 20th Century leaves here today for New York it probably will not use more than 10,000 gallons of water on its whole trip and the railroads will have produced virtually no wastes. In that operation, we purchase the water from the city and the wastes from the yards go into the municipal sewerage system. The wastes are changing materially from sludges and electrolytes to oils and certain other soluble materials.

In general, our industry purchases equipment on an individual basis on the commercial market. We would purchase oil separators if needed. We probably would not have the necessary railroad staff to design them. When we want information we would probably get it from technical journals and to some extent through commercial thoroughfares. In many cases recently, consulting engineers were employed to solve our industrial waste problems.

The AAR is an advisory body and we inform the railroads through our regular publications of any research accomplishments we have made. The Sanitation Research Office is considering research on several specific problems at the behest of Committee Thirteen of the American Railway Engineering Association, of which Mr. Teal is a member and has been for many years. The AREA is the construction and maintenance Section of the Engineering Division of the AAR. Mr. Teal may want to elaborate on some of the activities of the waste disposal committee, a subcommittee of Committee Thirteen on Water Service and Sanitation. All over the country the railroads are cooperating with State bodies in the problem of oil removal. There are many oil removal installations going in at present. One example is a unit which cost some 300,000 dollars and treats only a million gallons per day. This is in full time operation.

We were very much interested in reading Mr. Black's paper on sampling methods with all the implications of difficulties with sampling oil in industrial wastes, a problem with which we will no doubt become very much more familiar. An attempt is being made by my office to obtain the information which the National Association of Manufacturers and the Conservation Foundation found for other industries of the country. Thank you very much Mr. Chairman. These are the only comments I have at this time.

RAILROADS - D. C. TEAL

The railroads do have problems of waste disposal although not as extensive as some of the other industries. In most cases the question is what to do about the oily wastes from an engine-wash platform, from a diesel servicing point, or from roundhouse engine pits. The railroads have recognized and accepted their responsibility by adopting ways and means of preventing this objectionable waste from entering public streams. In this connection many railroads have utilized API recommended designs for separating oil from water and have also used other patented devices for this purpose.

That the railroads recognize their responsibility is also evidenced by the railway waste disposal studies which Committee 13 of the American Railway Engineering Association (the engineering division of the AAR) has been making for the past three years. These studies have to date consisted of:

Classification of railroad wastes.

A resume of State and Federal laws relative to stream pollution.

A review of the presently known processes for treating industrial wastes.

The 1951 report of the AREA Committee further recommends that the

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subject be continued and turned over to a joint committee composed of representatives from the various divisions within the AAR.

RUBBER - D. L. PELLETT

For the past 10 or 15 years, the rubber manufacturing industry has been diversified more and more. Many of their activities are entirely unrelated to other manufacture and these unrelated activities are perhaps more closely allied to other industrial groups that have already reported. Many of the manufacturers are engaged in the production of metal products such as aeroplane wheels, airplanes and other metal parts. Several of the larger companies are engaged in the manufacture of chemicals, both heavy chemicals and organic chemicals, and several of the larger manufactuers are operating plastic products plants. Those unrelated activities have made no attempt to classify their waste problems because they say they are more directly related to other industry groups. The metal problems are primarily those of disposal of plating wastes; chemical plants involve specialized waste treatment problems. In the manufacture of plastic products, there is generally no waste problem involved because it is usually a molding, a calendering or sheeting process. In what you might call the basic operations of rubber manufacture, there are three classifications. There is first of all the processing and fabrication of rubber into tires and industrial products. The second classification is the manufacture of reclaimed rubber, and third, the manufacture of synthetic rubber in government-owned synthetic rubber plants. As far as the rubber processing itself is concerned, it is a dry processing industry where the principal problem is that of keeping the oily wastes from machinery pits from contaminating surface waters. The manufacture of reclaimed rubber involves a troublesome problem from a waste disposal point of view, but that branch of the industry has changed materially in recent years. The old reclaiming process has been superseded in many instances and will be superseded more generally as further progress is made. The newer reclaiming processes are neutral processes which do not employ the use of caustic soda. There have been a number of mechanical reclaiming processes which are dry processes, which employ neither caustic soda nor acid materials. The operation of the synthetic rubber plants involves a contamination problem which is largely a mechanical problem -- that of keeping the rubber fines out of the surface waters. All of the synthetic rubber plants were equipped with suitable waste disposal devices when they were originally constructed. Generally speaking, the fines can be separated by a combination of flotation and settlement. Perhaps more progress could or should be made in the elimination of contamination and perhaps more progress will be made. At the moment, rubber manufacture is primarily a dry process industry which has mechanical problems in waste prevention.

TEXTILES - E. A. LEONARD

Mr. Chairman and gentlemen. The survey of projects, processes and problems has been finished and is now being tabulated for submission to the Secretary. Incidentally, the classifications on the punch card system appear to fit very well, and I think we will be able to tie it in with the coding on the cards as we submit it, pending any changes that are made at this session. The subcommittee representing the textile industry is now being organized with four major divisions; the wool textile manufacturers, the cotton textile manufacturers, the synthetic textile manufacturers and the synthetic fiber manufacturers. Although the manufacturers of synthetic fibers usually fall in line with chemical manufacturing industries, it has been the opinion expressed to me that they would prefer to be represented separately for their fiber manufacturing of the textile branch, particularly, since some of the processes are specialized such as the washing of viscose rayons to remove sulphur from extruded fibers, etc. Since the textile industry is largely represented by very old installations relative to other industries in the country, the problem of setting up a committee is at least as much of a job in salesmanship as it is technical, because many of them consider themselves to have squatter's rights to put wastes into streams and have preferred with some few notable exceptions to await coercion by State laws before installing processes for overcoming stream pollution. The greatest problems in the cotton finishing industry are caustic mercerizing, ammonia peroxide bleaches, and dyeing. Apparently the best process for treating those wastes at the present time is shallow trickle filters. Wool processing wastes are small with the exception of wool scouring, which is in itself probably the most noxious element of all textile processing. The waste consists of very high concentrations of crude lanolin, some sebaceous materials, and some animal excrement, and all of that is removed in a wool washing process. There are three procedures currently used commercially for treating those wastes. One is acid cracking with or without grease recovery; second is centrifugal extraction of wool grease emulsion, and third, an acid hypochlorite cracking with grease recovery. None of those processes at the present time is capable of supporting itself economically, and research work is going on in at least three places which is aimed at either improving the quality or the economics of the process. In addition to the research listed in the bibliographies we have, there is one at the Lowell Textile Institute which Dr. Gurnham here knows of, and I believe that it's sponsored by the Massachusetts Department of Public Health. Plans are initiated for a program at the next annual convention of the textile wet processing trade association for presentation of the purposes, objectives and functions of this organization so that we hope to overcome the natural reticence of many members to concern themselves with stream pollution.

L. COX: I suspect that will be the best recording for the day. That finishes our list of trade association representatives. There might very well be some points that Mr. Clarence Klassen would like to make on behalf of the State health agencies. Clarence, do you have a few words you would like to say?

CONFERENCE OF STATE SANITARY ENGINEERS - C. W. KLASSEN

While I am representing the Water Policy Committee of the Conference of State Sanitary Engineers and thereby shall attempt to reflect the opinions of what I hope are the majority of States, my comments naturally will be influenced by my personal experiences in the State of Illinois and by my official affiliations with the Ohio River Valley Water Sanitation Commission, the work of which has already been referred to during this meeting.

We have heard a number of references to cooperation. To me, the definition of cooperation most befitting this meeting is given by a General Electric official when he said "cooperation is not a sentiment but an economic necessity." The full meaning of this has never been truer than at the present time in this field of stream pollution control involving industries.

We have just heard the representatives of the U. S. Public Health Service state that they do not favor centralized Federal control of stream pollution, although we know there are other forces directing their efforts to that end. Never before has it been more imperative that real cooperation exist between industry and the various State and interstate regulatory agencies for through such cooperation are the final bulwarks against such centralized Federal stream-pollution control. Such cooperative efforts between an industry and the present regulatory agencies must be founded on mutual confidence. Such mutual confidences involve responsibilities on the part of both industry and the regulatory agencies. This especially applies to States. In my opinion, this two-way cooperation involves the following:

1. The need for more uniformity among the States on their industrial waste policies, at least, on a basin basis. Examples of what such policies could and, I feel, should include are the following:

   a. That the ultimate object is to abate and prevent stream pollution but the first approach should be through waste utilization.

   b. That there should be full utilization of the stream and not the approach of "how much can we make industry do," but rather how little is necessary and still maintain the stream in that area for the legitimate uses.

   c. The State's responsibility (with the consent and active cooperation of the industry) would be to determine the extent of an industrial problem, the components of the waste (strength and volume), their effect on the stream and the reduction of the strength necessary commensurate with the water uses in the outlet stream at that location.

d. The responsibility for the solution of an industrial waste problem rests with the industry and the fact that no solution has been found merely indicates insufficient time and effort given to the problem by the industry. The idea and proposal that governmental agencies spend public funds to develop processes of municipal and industrial waste is not in accord with the idea of free enterprise.

e. Waste utilization or treatment is a part of a production problem and work in this field should parallel the development work on any new product.

2. The State should know what industry is accomplishing in the treatment of its wastes; for example, this would include: (a) keeping advised of research developments and (b) through the submission of monthly operation reports, know the quality of the effluent being discharged to a stream. Streams are public property and the States, as representatives of the public, should know how its property is being used. Such operation reports very often are of value to an industry, for the State agency, knowing the facts, can often act as a buffer between public complaints and alleged industrial pollution.

3. Industry should know what the States are doing. This would include any requirements, regulations or policies that might effect industry.

Items #2 and #3 above require close cooperation between industry, State and interstate regulatory agencies, and one means of accomplishing this is through such industrial committees such as this but only if both industry and the regulatory agencies realize that such cooperation is a two-way street. If industrial committees (call them advisory, technical task or action committees) are to be truly a part of the field of pollution control, then it would seem only logical that such committees be properly utilized, and it would seem only logical that industry be present when initial discussions on the establishment of stream standards, requirements, and policies affecting industry are carried on. If industry is going to be "part of the show," they should be present "when the curtain goes up."

4. Industrial contacts on problems of pollution on either inter- or intra-State waters should be with the State in which the industry is located, and where these problems involve interstate waters it should not

only be the duty but the responsibility of the State to coordinate its requirements and activities with the other States involved, where necessary, through the U. S. Public Health Service or through an existing interstate agency.

It must be recognized by control agencies that industry is not static. Changes and advancements in industrial processes is one of the nations. Waste-treatment processes often depend upon production methods and as these change so do the solutions to the waste problem. Thus, regardless of how enthusiastic we may become, we must be practical and face the fact that at any particular time all of our industrial waste problems will not be completely solved. Mutual understanding between the control agency and industry is a prime requisite in the solution of any industrial waste problem, and there must be mutual confidence that the ultimate aim is to abate pollution by the must economical and practical method.

L. COX: I certainly thank you and it seems to me that there is a lot of common sense in the talk which you have offered. I hope we get a good recording of it, because I think everyone of us could use a copy of that.

CURRENT ACTIVITIES OF THE ENVIRONMENTAL HEALTH CENTER — PAUL D. HANEY

The object of this presentation is to give in brief form some of the recent and current activities of the Environmental Health Center in the water pollution control field. Results of past activities are available through publications by the professional staff of the Center. These have appeared as special bulletins, in Public Health Reports, and in the publications of various professional organizations, notably the American Chemical Society, the Federation of Sewage and Industrial Wastes Associations, and the American Water Works Association.

There has been distributed to the members of this group a copy of a mimeographed bulletin on recent activities in the field of water pollution control. This was prepared for use in connection with recently held regional meetings attended by State and Interstate water pollution control agencies and the Public Health Service.. This bulletin gives an up-to-date list of research and other activities, and includes a brief abstract about each project. Reference is also made in this bulletin to the Environmental Health Center training activities.

The Environmental Health Center is organized as follows: the Research and Development Branch; the Survey and Investigation Branch; and the Training Branch. The Research Branch is concerned with environmental health research in the basic sciences of physics, chemistry, bacteriology and biology. The Survey and Investigation Branch is concerned with industrial waste, water, sewage and stream studies largely in the field. The Training Branch is concerned with radiological health and sanitation training at Cincinnati and in the field. There is close cooperation among the Branches of the Center.

Research and Development Branch

Chemistry and Physics Section

The Chemistry and Physics Section of the Research Branch has either recently completed or has under way studies on industrial waste constituents including phenolic compounds, pyridine, lignin, furfural, pentose sugars, and chromium. Studies of oxygen consumed methods, B.O.D. and other analytical procedures are being continued. Special studies also in progress are those on radioactivity, radioactive wastes, spectrographic methods of analysis for metal ions, schematic characterization of organic industrial wastes, detection of water supply contaminants, and the relationship between B.O.D. and oxygen consumed values of industrial wastes.

More than the entire time allotted to this presentation could be devoted to a discussion of the important activities of the Physics and Chemistry Section. However, I shall not dwell further on this section's activities, because time has been reserved on this program for Mr. Ruchhoft, Chief of the Section, to present a discussion of some of the important work in progress under his direction.

Biology Section

The Biology Section is devoting the major portion of its time to three projects. Studies are being made of algae which produce tastes and odors in water supplies. Pure cultures of various algae are being grown and are tested to determine odors which they may produce, and strength of these odors. It has been found that some antibiotics are effective in the control of algae. Investigations are under way to determine if such methods of control may be desirable and economically feasible. Studies in stream sanitation include those directed toward a better understanding of the reliability and use of aquatic organisms as indicators of the severity and extent of pollution. It has been found that individual organisms are unreliable as indicators of pollution and that the entire aquatic population must be considered. The absence of clean water forms is often more significant than the presence of so-called pollutional forms. Studies are being made at all seasons of the year and the physical-chemical environment related to aquatic populations which develop under such conditions.

Studies are being conducted on toxic industrial wastes. A survey of literature dealing with the toxicity of industrial wastes to fish has resulted in the publication of a paper entitled "Critical Review of Literature on the Toxicity of Industrial Wastes and Their Components to Fish. Part I. Alkalies, Acids, and Inorganic Gases," (Sewage and Industrial Wastes, Vol. 22, No. 11, pp. 1432-1458, Nov., 1950). A section on metals is nearing completion.

Several meetings of Section III, Subcommittee on Toxicity, Research Committee, Federation of Sewage and Industrial Wastes Associations, have been held and agreement reached on recommended procedures for the bioassay of industrial wastes. These recommended procedures have been published in a recent issue of Sewage and Industrial Wastes (Vol. 23, No. 11, pp. 1380-1397, Nov., 1951). These procedures are designed for fish studies but others are in the process of preparation for mollusks and certain of the plankton organisms.

Bacteriology Section

One of the most important projects undertaken by the Bacteriology Section has been the study of the use of a membrane filter in sanitary bacteriology. As indicated in a recent publication* describing the membrane filter studies, "A major problem of bacteriology has been the development of rapid, accurate techniques of isolating, identifying, and counting organisms in water, air and food. The results reported promise a substantial reduction in the time, labor and space required for ... bacteriological analysis, and they indicate a likelihood that these techniques will be more certain and precise in results than methods now in use."

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* Clark, H. F., et al. "The Membrane Filter in Sanitary Bacteriology," Public Health Reports, Vol. 66, No. 30, pp. 951-977, July 27, 1951.

The filter membrane used is a circular disk approximately 5 cm. in diameter and 0.1 mm. thick, composed of a cellulose derivative. These membranes are extremely porous. The turbular holes through the filter disk are parallel to the direction of flow of the liquid, with slightly smaller diameter at the top. The membrane can be sterilized by exposure to ethylene oxide vapor. The membrane is an effective filter and, because of its high porosity, passes liquids quite rapidly. In this study, methods and media were developed by the use of which direct coliform counts of low turbidity waters can be made in approximately 15 hours. Adaptation of media and methods were also made to permit a count of bacteria corresponding to the agar plate count of Standard Methods. A differential medium for the detection and enumeration of S. typhosa from water in thirty hours has been developed. A full description of this work is presented in the July, 1951, issue of Public Health Reports.

Survey and Investigation Branch

The Survey and Investigation Branch is concerned with studies in the field of industrial wastes, water and sewage treatment plants and the conduct of various types of water pollution surveys. This branch is organized into three sections; Industrial Wastes Section, Field Survey Section, and Water and Sewage Section.

Industrial Wastes Section

Activities of this section have included co-operative studies with 14 industries operating plants which produce industrial wastes of major importance. These projects have included wastes from integrated steel mills, with especial emphasis on by-product coke operations, beet sugar, kraft and semichemical pulp and paper and wood naval stores. A number of special studies have developed as an outgrowth of this work. These have contributed additional valuable information. Plans for future activities include studies of pulp, synthetic ruber, and citrus wastes.

A recent publication which has been well received is a manual for sampling and gaging of industrial wastes by the Chief of the Industrial Wastes Section, Mr. Hayse Black. You have been provided with a copy of this publication.

Field Survey Section

Recent and current activities of the Field Survey Section include a report on a field study of the water pollution problems in the South Platte River Basin, a special survey of the Mississippi River in the vicinity of St. Louis, plus special studies made at the request of the Corps of Engineers, U. S. Army, in connection with water resources development programs. In addition, two large-scale investigations involving radioactivity studies are under way on the Columbia River and the Savannah River. This section also provides assistance to Public Health Service River Basin Offices in connection with interagency planning activities in the New England-New York and the Arkansas-White-Red areas.

Water and Sewage Section

The Water and Sewage Section has recently completed studies of bathing water quality. Additional field studies are now in progress on direct-recirculation trickling filters.

Training Branch

Sanitation Training Section

Recognizing the need for more professional people with well-rounded training in water pollution control practices, the Environmental Health Center inaugurated in 1948 a training program designed to assist in the operation of water pollution control programs. A training course in water pollution control was offered for sanitary engineers. It was well received, and as a result of requests from State agencies engaged in water pollution control activities, courses for chemists, bacteriologists and biologists have been added.

It is noteworthy that of the ten technical sanitation training courses scheduled at the Environmental Health Center for the fiscal year 1952, seven are designed for water pollution control personnel. Five are courses for engineers and scientific personnel and two are specialized technical courses dealing with specific problems in the industrial waste field. Three of the courses are on an advanced level while two are for professional personnel with limited experience in this field.

The training courses are available to technical personnel from industry who are engaged in water pollution control activities. No tuition is charged for the courses.

Staff for the training courses is drawn from specialists at the Environmental Health Center and prominent consultants in the field. Opportunity is given during the courses for consultation on special problems with the staff at the Environmental Health Center and the consultants.

Thus far, seven representatives of industry have received specialized training in the water pollution control field at the Environmental Health Center. Industries represented were the automotive industry, a distillery, oil refining companies, and a large chemical manufacturing company.

A bulletin of "Training Programs of the Environmental Health Center" for the period July 1, 1951, to June 30, 1952, has been sent to you.

Opinion Poll

During the January, 1951, meeting of the National Technical Task Committee on Industrial Wastes, an opinion poll was taken as to the preference of this group regarding field investigations and research activities of the Environmental Health Center. The Task Committee showed preferences for studies having to do with the general question of self-purification of streams and toxicity.

During September and October of this year, there was opportunity to poll the various State water pollution control agencies. The States favored accumulation of information on all types of industrial wastes, as for example basic data on waste flow and quality, toxicity studies, and analytical methods. Replies were received from 25 States.

The opinion poll used to obtain data on State preference is a revision of the one used last January. You have each been given a copy of this poll.

New Quarters for the Environmental Health Center

The new E.H.C. building located at Grandin Road and Columbia Parkway, Cincinnati, is now about 35 per cent complete. The completion date will probably be late in 1952. This will be a six-story building of reinforced concrete construction and will provide vastly improved facilities for research in the environmental health field.

Analysis of Low-Flow Data

Each of you has received a copy of a paper entitled Analysis of Low-Flow Data. This paper is tentative in nature so will you look upon it simply as a preliminary discussion of the problem of analysis of low-flow data. It is of interest to us to study the low-flow of the streams as the ability of the stream to assimilate pollution is dependent to a large extent upon its flow as well as on the strength and the volume of the waste it receives. Critical conditions often occur during low-flow periods and in stream studies we are frequently interested in the answer to this question. How often may we expect a low-flow of certain magnitude? Does it come once a year, once in five years, once in ten years, or once in a hundred? The paper on analysis of low-flow data gives one possible approach to an answer to the question of recurrence of low-flows which as I said is of a preliminary nature and the method outlined probably cannot be applied in all cases. It is believed, though, that it offers one approach to low-flow studies. I hope if any of you have occasion to analyze low-flow data that you will give it a try. It is believed, though, that it offers one approach to low-flow studies. I hope if any of you have occasion to analyze low-flow data that you will give it a try. It is based upon Gumbel's study of analysis of flood data where he used skewed type of distribution curve and this applies -- that same skewed curve which he studied mathematically -- to analysis of low-flow data. Material presented here has also been presented by Velz in the recent series of articles on statistical analysis which appeared in Water and Sewage Works. I recommend that series by Velz to you very highly. That is good material on the analysis of stream data. This is only one phase of the material that he covered. I believe that probability studies like this are of great importance in the water pollution picture.

L. COX: Thank you Mr. Haney. I think that those last comments are certainly of interest to everybody who is concerned with the problem of water pollution control and more particularly with the situation you are going to face when you go to a new location. You find that people have different views on minimum flow. Some want to use the minimum instantaneous flow. Others, the minimum daily flow for the last 10 years or the last 20 years, the minimum flow for a 3-day period, or the flow which will be exceeded for 95% of the time - all sorts of things so that if you really want to get a good basis for deciding what your design flow ought to be it certainly warrants a good look at this material and the material presented by Velz because by following this you ought to come out with a lot better answer and be in a much better position to defend your position than you ever would be in any other way. Another thing that Mr. Haney mentioned was the training program which they run in Cincinnati. I don't know whether that would be of direct interest to some of you fellows or whether in the industries that you represent there might be companies that would like to avail themselves of this opportunity. So before we go on to Clarence Ruchhoft's discussion of carbon filters as applied to studies of industrial wastes, I would like to ask for any comments that you have to offer on the subject of training programs at the Environmental Health Center.

C. S. BORUFF: Mr. Chairman, I might add just a word or two. Last year I believe was the second time that the training school had been thrown open to industry representatives and we sent to the Center one man who took the training course last year. He had just been appointed our sanitary engineer for our various companies. His schooling had been in sanitary engineering. He found and we found the work very good and helpful. He got a great deal out of the school and I know that that training has added to his satisfactory work with us as our company sanitary engineer.

L. COX: I think many of us would find the same thing to be true. I think my company will probably send a man or two men to the training school. We are really glad to have the opportunity. I don't know whether any of you want to make other comments or not but it is certainly something that you should consider. That is the sort of information you want by all means to pass through your trade association groups on down to individual companies. Are there any other comments on that score?

L. A. DANSE: We sent two men, Mr. Chairman, one an industrial hygienist and the other a chemist and they both were very pleased with what they got and their supervisor was highly satisfied with the results. We can commend the courses most highly just as has been indicated for a sanitary engineer whether the man had any sanitary engineering or not.

CARBON FILTERS APPLIED TO STUDIES OF INDUSTRIAL WASTES -- C. C. RUCHHOFT

As Mr. Haney said I am with the Physics and Chemistry Section and I would like to say that we have between 45 and 50 research projects that would probably all be interesting to some of you. However, we are going to stick to one and talk only about the application of the carbon filter to studies of industrial wastes. Now I am not going to try to tell you how you can do this. I am simply going to review a little of what we have done with the carbon filter and how we started to do it. You probably have all experienced taste and odor problems in water supplies. We have at Cincinnati a good many years and the people in Cincinnati have complained regularly to the water purification plant superintendent about their tastes and odors and the only way you can report tastes and odors at a plant of that kind is by the subjective test -- it didn't taste good or it didn't smell good and when you got there maybe it was gone and then you say it was due to phenol. It's like the doctor - he doesn't know exactly what causes disease but phenol is a pretty good thing to blame it on because everybody knows that as soon as you chlorinate it you can get the taste down to 5 parts per billion so we say it is due to chlorophenols and let it go at that. We decided that that was not the place to end it -- that that was the place to start it. Everybody had been using carbon for a good many years for removing tastes from water supplies and for purifying various chemicals but for some peculiar reason we never thought of it before so about three years ago we decided to see what we could do with carbon as a matter of concentrating materials from polluted water and then studying the materials that it would pick up. So we put carbon into an iron tube about three feet long and about four inches wide and if you want to look in the bulletin at the head of page, or section 10, the second page, you will see the diagrams of the filters that were constructed. It took about 1200-1600 grams of carbon to charge these filters. They had strainers on each end. Then the water would simply pass through them at a rate between one-tenth of a gallon per minute to six-tenths of a gallon per minute which is a comparatively slow rate. After passing from 5,000 to 75,000 gallons of water through the filter, the filter would be detached and sent back to Cincinnati for removal of the carbon. When we started this of course, we didn't know any of the difficulties that we were going to run into. We didn't know anything about carbon. No doubt all of you people know a great deal more about it so we tried Cliff Char and Nu Char C-190. They had to be extracted to see whether they contained organic materials themselves and whether that would interfere with the application of this method. We found that the Cliff Char had about 12 thousandths of one percent of organics in it that could be extracted by ether and that the C-190 had much less than that. I think it was about three thousandths of one percent, so we were satisfied that we had a test that could be used. When the carbons were then brought in, the first thing that was done was to remove them from the filters and air-dry them by simply laying them on a pan or a screen and leaving them there for a period permitting the water to evaporate. The air-dried carbons were then put into Soxhlet type of extractors and extracted with an organic solvent. We started with ether. This has been described in a paper by Middleton and Braus which you have in your folders. By this procedure we proceeded to collect grams of material depending, of course, on the concentration that was present and the quantity of water that was passed through. It was a tedious job to extract the material from the carbon - it required about a week to extract 1200 or 1500 grams of carbon with the ether. When that was accomplished, the ether was boiled off slowly and the material was dried, desiccated and then it was weighed. Then you can, if you know the quantity of water that you put in and the extract you have, calculate the concentration of material that is in this particular water. Now with drinking waters along the Ohio River this method yielded from 9 to 30 parts per billion of organics. That was the gross material and this was obtained with the Cliff Char, the coarse carbon. We were not satisfied with that so we tried the Nu Char C-190 which had lower concentrations of organics in it to start with and a higher capacity for adsorbing material. The C-190 extracted about five times as much material from the same water as the Cliff Char so that we know that in these early studies we only recovered a fraction of the material that we should have. Now when we have the raw extract, we can begin to work on it and as I said we get from two grams up to twenty or thirty grams from drinking water, and we have had as much as three hundred grams from an industrial waste, so we go through the chemical separation process. That has been described and this is again in your books - it's the Shriner and Fuson method as modified by Mr. Braus in our laboratory and by the application of this technique we can break this material down into a number of constituents. We get out the neutral compounds, the acid compounds, the basic compounds, the amphoteric compounds, and the phenols. Then again from each of these or from the gross material we can apply vacuum fractionation, or we can apply counter-current extraction to get further separation, or we can apply elemental analysis to determine just what types of materials there are and what their compositions are. Then to fractions of this material we can apply ultra-violet analyses and infra-red spectroscopy to aid us in the interpretation of what is represented in the extracts. Now I don't want to spend a lot of time on this but you can see that if you have the material to work with you can do something. I want to give an illustration on what we obtained on one industrial waste. I don't want to say that this is important or that this waste needs any particular study. It is just being used as an example here. It happens to be the petroleum industry. We have similar examples on naval stores wastes and they are perhaps just as striking; incidentally, we are working on several others and if any of you gentlemen would like to contribute a waste we would consider cooperating with you.

Now I want to point out what was obtained with petroleum separator effluent passing through a carbon filter. First I will say we had about 300 grams of material taken out by 1500 grams of carbon. That seems like a very high quantity of extract for that portion of carbon and so we do not know whether this is entirely representative. Maybe some materials came in, they were soluble in water and as the carbon became more and more saturated they were eluded so we may have missed some constituents but this is the way it was. This vial contains the raw material that represents the gross extract. It was broken down by the method that we mentioned and we got the phenolic material 3.75 percent; the amines 0.44 percent; and the insolubles 11.18 percent. Now the thing that is striking about this to us is the fact that 84 percent of the material was in this neutral group. Now having that we can go further -- we can take this neutral group and break it down and here we have the distillation product which are distributed over quite a boiling range and you can see that they include representatives from lighter oils to a very heavy material. Now then having these materials we can begin examining them more critically by infra-red as I said and by ultra-violet and we have in these cases examined the infra-red spectrograms of the neutral fraction and of some of these other fractions and if any of you care to you can come up and examine the infra-red spectrograms of this material and of similar material which came out of another source nearby. Naturally this does not give us all the answers but we have opened the field here of a method which certainly can be applied in the study of industrial wastes. We are going to use it and have used it for determining the efficiency of certain treatment processes. It has been used by us at Cincinnati with the Cincinnati Water Works to determine the quantity of organics removed in certain of their treatment processes. It can be used when you treat an industrial waste to determine what fractions you are taking out biologically and which you are not. It can be used to determine the fractions which are taste and odor producers; for instance, in this particular array here, the ones that are the odor producers are the neutral fractions. The neutral fractions give odor intensities at concentrations about one-fifth as high as the phenols, that is the raw phenols. In other words, these materials can be detected in concentrations in about 10-11 parts per billion; a good odor sniffer will detect them in five parts per billion. I don't want to go too much further on this but I would like to say again that it should be very useful on some of these wastes and I would like to add that this whole procedure, without the carbon filter by counter-current wet extraction methods, can be used on concentrated wastes. I don't think as far as our Service is concerned that this has been used previously. We hope to go into that and see whether we cannot show some people how they may determine more about their wastes and what can be done about them with these techniques. Thank you.

L. COX: Thank you Dr. Ruchhoft. Does anybody want to offer any comments on the information which has just been presented?

L. COX: I was going to ask about that because I have observed that carbon in contact with steel in the presence of water tends to accelerate corrosion substantially.

C. C. RUCHHOFT: We were slow but we learned.

T. POWERS: Another thing, Clarence, in using that technique for quantitative analysis, did you run knowns through to see how much you could re-extract? Do you know your re-extraction figures? You may be a thousand percent off.

C. C. RUCHHOFT: I'm sure of that.

T. POWERS: You are in the right direction. You're always low.

C. C. RUCHHOFT: This thing is new as far as we are concerned and I'm sure that this extraction efficiency is going to vary depending upon the material and that's one of the things that we have on our agenda--to determine the extraction efficiency of various materials.

L. COX: You have two things, the efficiency of the carbon in picking the material up in the first place, and the efficiency of carbon extraction and as Tom says in both cases it can make your results low.

T. POWERS: You have a third factor too, don't you Lyman, as extraction goes on you are liable to have displacement of one compound by another.

C. C. RUCHHOFT: You're going to have oxidation, chemical change, and biological change.

T. POWERS: I would like to say that in spite of all these uncertainties I think that this is a most valuable technique and it is bringing out some fundamental information. I am certainly in favor of seeing more of it.

L. COX: Yes, well that of course is the basis on which Clarence presents it. It is a useful working tool so that you can get enough of these materials to examine and determine more exactly what they are.

T. POWERS: I would like to point out that the ammonia still liquor apparently has a bioligic inhibitor in it and here is the technique to find out what it is. We have used this same technique to isolate inhibitory compounds. Someone should hop to it and remove that inhibitor so that it will be possible to oxidize ammonia still waste, at least the phenols in it, at the rate you should oxidize phenols.

L. COX: You mean there are some other compounds in there that exert an inhibiting effect on bacterial life, you can't oxidize the phenols in this liquor as you could if you had phenols alone.

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T. POWERS: That's right.

E. A. LEONARD: I believe it is common practice in the sugar industry to extract coloring matter with activated charcoal. There is the possibility of industrial application. Dr. Roach may be able to add something to that. He knows more about it than I do.

D. J. ROACH: The carbons are used extensively in the sugar industry. The beet companies generally use a vegetable carbon. Almost all the cane sugar refineries use a bone char.

L. COX: That might be a lead, as to another carbon, Clarence—bone char of the kind that they use in sugar refineries.

C. C. RUCHHOFT: That may be. I don't know what the organic content of such carbons are, of course that's the thing we have to start with. We have to be sure that there are very low soluble organic fractions in the carbon to start with. In the materials that we have worked with, we have been assured of that.

D. J. ROACH: A lot of carbon is used in the sugar industry for decolorizing the liquors, and also for the removal of ash; however, the removal of ash by this procedure is by no means complete.

UNIDENTIFIED: Clarence, do you know about the new synthetic adsorbent used in the ___________ industry. It is reported to be very much superior to the bone chars that have been used. I can't give you the name of the thing offhand but it might very well be a desirable material.

C. C. RUCHHOFT: Yes, I agree there are a lot of these things that we haven't been able to investigate, we have a number of projects. We have about five projects per man and there are a lot of things that we would like to do that you just can't do. A gentleman here mentioned wood. I think it would be interesting to determine the adsorption of some of these things with some of those materials. One other thing that I might mention is that there is a difference in adsorption of the products that you get depending upon the p^H as you probably all know. We ordinarily make the extraction at the normal p^H. If we then take the effluent from the first filter, bring the p^H down to the 2 to 3 range and pass it through another one, we extract about as much material as we have in the first one.

INVENTORY INFORMATION

M. FULMER: This information was gotten from current literature and on page 21 under Item 10, you find the references from which this information was taken. These are listed under the headings of the industries that are represented on this Committee and they are divided as to whether they are actually research on industrial wastes or whether they are just related to industrial wastes. We thought this current information might be of interest to the members. They can check rather readily on what research is being done at educational institutions and by the Public Health Service in their fields.

L. COX: You refer to the tabulation that follows after Item 10, entitled "Current Industrial Waste Research," and I have noticed that you have included in there information that this Committee has sent in as well as the information that you were able to get from literature.

M. FULMER: Yes.

L. COX: This provides a very handy reference as to research in progress with the indication of who's doing the work and where you can get additional information. That's fine. Do you have any suggestions about the amount of information you have gotten and whether certain industry groups have done a better job of reporting, or do you think that considerable information is still missing?

M. FULMER: There is missing information. We haven't received information from all the representatives. I believe about twelve of them have reported.

L. COX: That's some twelve out of the thirty-two groups that have sent in information concerning their current research projects, an expansion of that, of course, would be of benefit for the whole Committee.

M. FULMER: Most of our information was gotten from reference No. 2 on page 21, "A Review of Current Research and Directory of Member Institutions". A major portion of this list was obtained from that Directory. This information will be incorporated into this card system which will be distributed among the members. Just the titles are given here, there are no abstracts. The information will be more complete on the cards.

F. GURNHAM: I think this information might be more useful if we have the name of the professor or whoever is responsible for the progress in each case. I wonder if that could be included.

M. FULMER: It wasn't given in this Directory, but it could be included if we wrote to each one. I think that would be the only way we could get. Anything that was included on the cards would naturally have that information.

L. F. WARRICK: With that point of view it would be well if those replies would be filled out as completely as possible so we could have that information to put on those cards. The cards will be made out directly from the information that you supply, so fill out all the items that are to be recorded on the cards for your use.

L. BURROUGHS: I haven't looked through this very carefully but it strikes me that there are quite a few research projects in here that have no relation whatsoever to waste disposal or else I am not able to tie them in. I mean low temperature processing of coals, I don't exactly see the connection. Maybe there is some.

M. FULMER: I believe there is a little difference in waste products. At least I had that in mind when I included it. The waste might vary a little with the type of processing.

L. BURROUGHS; Well I have noticed too quite a few on air pollution on about page 16 under No. 10 that are related but it brings up the question as to whether or not we are going into the air pollution end of this thing. There are quite a few listed under occupational health measures that have to do with dust abatement.

L. BURROUGHS: I am mentioning this because it seems that we are going to have quite a bit of information as it is and the connection of this with water pollution is a little remote to my way of thinking anyway.

L. A. DANSE: I would like to take issue with Mr. Burroughs, as much as I appreciate his sincerity and judgment. It has been impossible for us in the automotive industry to distinguish between water and air pollution. We can't throw it out the window, that's air pollution, we can't throw it in the sewer, that's water pollution. We try to spray a body for Mr. Burrough's automobile, we would like to spray it with good paint, we would like to spray it well. And in order to spray it well we have considerable overspray. The overspray theoretically must be taken away from the working area and that is an air pollution problem. But how do we keep it away from the working area? We have to wash it out of the exhaust air in a scrubber. Then what do we do with the wash-down water? We can't throw it into the sewer so we coagulate the paint particles out of the water by chemical means. Then we have to dispose of those paint particles, and we can't burn them because that's again air pollution. I would like to know where the dividing line is. I believe that we are going to have to admit that it is a very fine balance and we are also going to have to admit that sometimes we can't distinguish.

L. COX: There are, no doubt, many places where, if you don't look out, you will cure an air pollution problem at the expense of causing a water pollution problem. But I think Lee is to be supported when he asked why a dust abatement survey of Chicago is in here.

F. GURNHAM: Here is another point that has been bothering me from the beginning. Much of this information comes from our Committee members' individual surveys. If we think there is some work being done in a certain place, we write to them and find out. What bothers me is this, there are fifty places where I think research may be going on on electroplating but I hate to write fifty letters and bother fifty people where that may not be the case. I think that is a job for our

Secretary, as someone should write to these institutions and say "Is there any work on any phase of industrial waste treatment going on?", rather than each of the thirty-eight of us writing. I think there should be some centralized effort on that.

L. COX: Yes, you can obviously carry this thing too far and I think initially we set out to obtain the information which was readily available rather than make a research project out of digging up the information.

EXPENDITURES ON RESEARCH

L. COX: Who wants to define research? That is perhaps the key to the whole thing. Do you want to offer a definition Lou, so that we have something to argue about?

L. F. WARRICK: I am not posing as any authority on what the definition should be at all. In fact there is quite a bit of discussion pro and con of what legitimately should be included when you are trying to arrive at figures, amounts being expended for research on trade waste problems. It would be very easy to run research into figures of billions of dollars if you included a pilot plant and demonstration plant developments. For instance, one company alone that is demonstrating right now one of the major processes in the pulp and paper field is spending between 6 and 7 million dollars on a demonstration plant. Now that obviously is not research in the sense that we have visualized it here. That is development work that is going from the pilot plant on to the operational stage. For our purposes this expenditure on research might be directed toward the basic items that are involved in arriving at the answers that are needed before we go into pilot plant and full scale demonstration projects. If we could get several categories whereby we could get somewhere near the true perspective before the public of what actually is being done by industry. I believe the table that I quoted to you this morning shows how misleading sometimes this picture can be. Much of that over-all research reported there was of a character that you might call basic. So we should certainly understand what we are after, and that is something that the task groups might discuss and come up with some recommendations as to what they think might be done after some leads are obtained through general discussion here this afternoon.

L. COX: Well, Lou, I take it that you think it would be of considerable advantage to industry to have at hand some data that would show the extent of the industrial effort on water pollution abatement. That's your idea. And I would like before we really get down to what is or what isn't research or what ought or ought not be included to hear some comments concerning that particular view. Do you gentlemen think that there would be distinct advantages in having that kind of data, or don't you? Of course you recognize that in getting that kind of data you have a lot of work to do. It is not to be had without a lot of rather detailed study on the part of the trade association and their committees and even then it wouldn't be complete.

L. BURROUGHS: We couldn't give it to you for the petroleum industry even if we tried to. There seems to be some difference of opinion as to just what constitutes research work. If it is something that, say, an oil company is doing in a refinery on one of their water pollution problems, if it means neutralizing something or oxidizing something, we don't ordinarily consider that research. It is of course in a way, but we have a great many of that sort of thing going on and the cost of it is something that is rather hard to get. You have men that are on the payroll that are working on it and you don't keep track of their time, you may not even keep very accurate account of the material that is used. We do know what we are spending on research projects at universities, academies, etc.

L. COX: They are small by comparison.

L. BURROUGHS: Yes, they represent a comparatively small expenditure in the over-all picture. And then you have on top of that the more important matter of what money is actually being spent for treatment plants by industries, which would be a very interesting figure.

L. COX: Well, that's what I was going to say. If you only brought out the research figure, you would have only a small part of the story. You have, in addition, capital expenditures that were made for waste treatment, waste recovery facilities, and have then in addition operating and maintenance expense involved in running those facilities so that this research is simply one of three general classifications that apply to industrial expenditure of money on water pollution abatement.

C. S. BORUFF: What are you going to do with the figures when you get them? Maybe that will help us define this thing.

L. F. WARRICK: Well, this information that has been mentioned was set forth in a report that undoubtedly will receive publicity, presented last month at San Francisco. It was a report on the research work that was being done by the public and private agencies and this research by industry was largely for the industrial hygiene and water pollution field. That 1.8 million dollars figure is obviously low. It is readily apparent to those around the table here that much more is being expended on research in this field by the member industries here than that 1.8 million dollars.

C. S. BORUFF: Maybe it is a question of defining the word "research". The Industrial Research Institute which is a group of research directors, V.P's., etc., of course have very rigid definitions as to what is research--basic, fundamental, applied, and that sort of thing. If we were to define research in those terms, I am sure that the figure would be low. Maybe research is the wrong term. Maybe the figure we want is how much money is being spent in studying our industrial waste problems and commercializing those studies to get something done about it.

L. COX: That could very well be. I know that the DuPont Company keeps track of the money that has been invested in facilities for water and air pollution abatement, and they only use those figures in published articles or talks or any place where there is an opportunity to talk about the work that the company is doing on pollution abatement. And they in themselves are not too significant, but they illustrate to some extent how much of that kind of work has been done. I could say that we have spent 22 million dollars and it is running at a rate of 2 to 3 million a year; well, that means to you fellows that operate in the industrial field that we must have some pretty fair installation. Actually a big part of the facilities recover some usable product or else they are sanitary sewage treatment plants, so that you can get all kinds of figures depending on what you set out to do or what you set out to get and probably the first thing you need to do is to decide what you are going to do with it.

C. S. BORUFF: That's the reason I asked my first question. To be specific, our sanitary engineer now is going through our plants making plant studies as to source and potency of wastes so that we know where the wastes come from. To me that is not research, that is control work. If you ask me how much research, I would not include that, yet you ask me how much money our company is spending in studying and doing something about our waste, I would include it. I think it should be included.

L. F. WARRICK: Well, that brings in the angle of having this set up in several categories. Now what is the possibility of having in-plant studies included as one category? It is an expenditure going toward the definition of the problem.

C. S. BORUFF: If you are going to break it down into categories, then I would have more trouble.

H. GEHM: Wouldn't it be easier to throw it all in one hat? Research, development, control and treatment? Wouldn't you have a better gross figure when you got through than you would any individual figure?

L. COX: You might get them individually then make a gross figure out of it, but the thing we are talking about here is almost unobtainable. Lee said what trouble they had finding out, well the M.C.A. tried to find out too. We issued some questionnaires on water treatment and on waste treatment and I know that in many cases the information that we got was just no good at all. We wasted paper and time.

L. BURROUGHS: I want to make a couple other remarks. We also attempted to get a figure not only on research but on the amounts of money being spent for equipment to abate water pollution in certain cases. Now the minute you go into that you run into all the various ramifications of returns from these investments. You can put in some sort of scrubber to take hydrogen sulfide out of gas or out of water or something else, and you get hydrogen sulfide then which you sell to a chemical company which makes sulfuric acid or something else happens to it, or you put an oil-water separator in it to recover the oil. Okay that oil is worth something, and when you go to figuring that thing out, you get yourself so snarled up and when you figure that we have hundreds of thousands of units in the oil industry, it just becomes an almost impossible task and I know Mr. Danse has run into the same thing.

L. A DANSE: Exactly. The automobile industry will go right along with you there.

H. GEHM: And you can get into trouble that way, Lee. Individual mills where they have included in-plant equipment such as additional evaporator capacity as an item against the stream pollution control have been reprimanded by control agencies for so doing. I'll admit that such changes often do the job but there is also a realization on the investment and some regulatory people since have said this is not to be included in the over-all cost figures.

L. COX: Where you get into things like this, you have to recover a certain material and you put in a certain amount of plant based on economics alone. Well, you don't stop there, you add another 2 or 3 hundred thousand dollars worth of equipment so that you get very little pollution from it. Well, what do you put down? That part of the plant, if you know it, or don't you put anything down. It's tough business trying to break these costs down.

C. S. BORUFF: What is the purpose of this? Is it mainly for public relations?

L. COX: Sure, it is only to show people who think that no work is in progress, that industry is actually accomplishing something as evidenced by expenditures of these amounts of money.

H. J. ROSE: From the public relations standpoint, the public is more interested in money spent to accomplish results than money spent for research and collection of data. Just recently a large eastern utility company advertised that they had spent, I think it was $16,000,000 since a certain date to control air pollution, and were currently spending $3,000,000 more and that job was by no means done. Now, I don't know just how they got the figures, but that was their idea of telling the public of that community that they were on the job and that they were trying to take care of that proposition. And I think that they were quite right in putting down the gross figure.

UNIDENTIFIED: In line with that it looks to me like we ought to decide what is the best deal there for industry. Should we show a large figure that we have spent on it? From this discussion you can include any number of things and build the cost way up high or you can have it down low. Would there be any advantage to show a large amount of money has been spent on research and development by industries?

H. GEHM: Such figures though are subject to dispute by skeptical groups.

L. A. DANSE: There are a lot of skeptics in our communities and they come around and they want to see.

UNIDENTIFIED: Well, if we can't decide ourselves what goes in, how can they?

F. GURNHAM: Lyman, I wonder if Lou would settle for a different figure which is a smaller one but one that we might possibly obtain. That is, how much money is being spent on research at trade associations and at universities. That is what you might call pure or fundamental research.

L. A. DANSE: Cross the automobile industry off your list, you wouldn't have any figures from us. The automotive industry is spending quite a bit of money for process development, let's call it, not for research. That kind of thing we wouldn't have a figure for, would we Gaudaen. Just put a couple of goose eggs down for us.

F. GURNHAM: It's not that bad, Danse, you have your contributions for the Plater's Society, for example.

L. A. DANSE: That's goodwill stuff, that's public relations, that goes in the advertising slush pot.

C. S. BORUFF: Where did you get the 1.8 figure?

L. F. WARRICK: The 1.8 figure was the figure of this committee that was studying research in the environmental health field in the U.S. and it is so obviously low that right away it was questioned as being anywhere near a representative picture. To all appearances industry isn't carrying its load on research on these environmental health tasks, since the over-all figure was 7.2 millions from public funds.

C. S. BORUFF: I think that's bad publicity for us.

L. A. DANSE: What they are quoting is the basic research figure, and it is low.

H. J. ROSE: That's not what the public is interested in. They don't even understand that.

L. A. DANSE: Ah, they don't know what it's all about. They want to know what we are spending to abate pollution.

L. COX: Well, I figure that if we try to get anything, that we ought to try to get a figure that approaches the total that is spent to control water pollution.

T. POWERS: The public isn't interested in how much money we spend, they want to know about the results we get--how much pollution is abated. They don't care if it cost 2 billion or 2 million.

L. COX: Well, maybe we don't need the figure at all, that's the purpose of this discussion to find out whether there is a good reason for such a figure. Roy, how much trouble would you have getting that information out of NAM?

R. GREEN: Well, any trade association, such as we are, has difficulty in getting financial figures from a great many members, any kind of financial figures. We carry figures on our books on net worth, for example, that are fifteen years old and we can't get any new ones. We use that as a measurement of dues.

L. COX: Well this is a subject you can take up in your Task Committee groups and see what you come up with.

R. GREEN: I should like to make a suggestion that in view of the difficulty in getting such information that some very good statistician might devise a method to get a survey, a sample survey that might give you some basis at arriving at a dollar figure.

L. COX: That is probably the only way you could do it, some such arrangment.

L. COX: Mr. Warrick has passed copies of the drainage basin reports around. Please indicate on the sheet in front of you the ones you would like to have and the number of copies of each.

I would like to ask Dr. Harry Gehm to discuss the subject "New Horizons in Industrial Waste Research."

DR. HARRY GEHM - NEW HORIZONS IN INDUSTRIAL WASTE RESEARCH

I am going to make this very brief gentlemen, because I know we have a lot of business today and these talks must be finished relatively early. I think most of us in the pursuance of industrial waste work have probably crossed organic wastes which for one reason or other do not appear to respond suitably or are too high a concentration for application of the usual sewage treatment processes. One of these wastes in our own industry is sulfite waste liquor. Here on the basis of the pounds of oxygen demand the liquor amounts to between 800 and 1,000 pounds of 5 day BOD per ton of product produced. There has been a search naturally then for processes that are better than those that have been tried and those that are available, primarily the biological methods of treatment. I think the three new techniques that we could talk about particularly are, first, the process developed by DuPont for disposal of organic materials, particularly relatively pure organic mixtures in vapor phase, catalytic oxidation. Work of Green and others has shown that organics, particularly the lower fatty acids can be oxidized to c arbon dioxide and water by hot vapor passage over certain catalysts. This work has merely commenced and the primary report dealt with some of the basic characteristics of the process in the laboratory pilot plant stage. Secondly, I'd like to call attention to the so-called Sterling Drug Company process which is the work of Zimmerman on a process which amounts to wet combustion. In this process wastes such as sulfite liquor and other high organic wastes are subjected to air pressures between 1,000 and 1,500 pounds in a closed vessel and the temperature progressively raised to the point where it is claimed that the organics are oxidized to carbon dioxide and water leaving only the residual ash that is present in materials or mixtures of this type. A third process which I naturally know most about since we were the first ones to work with it with Dr. Graff of Oregon State College, since it was applied to sulfite liquor. This is a hydrolysis process in which no air is added to the waste but it is passed to a closed vessel after being pre-heated to a temperature of around 400 degrees Fahr. At this temperature definite gas-off occurs and we've been able to hydrolyze all the hexo sugars and part of the pento sugars. By proper application partial pyrolysis of a good part of the lignin is obtained to a degree where it drops from solution in a friable and filterable form having a high BTU value. We carried this work through the laboratory pilot plant stage. These processes are opening a new horizon for the treatment of organic waste. While they appear extremely simple, they are particularly difficult to study on a small scale for a number of reasons. One is that you are apt to have for some of these residues scaling difficulties. It's hard to control withdrawal under gas-off conditions of this type so that I don't think that we're going to get too far in the development until the processes are operated on a pretty large scale. This is particularly true because their possibilities depend on heat exchange which cannot be studied in small scale equipment. I know that you in the petroleum industry have done work in this general direction. In connection with our own work we have found a good deal of interest on the part of a number of other industries and I feel personally that this is one matter that perhaps we should pool our knowledge. Thank you.

L. COX: Thank you, Harry. This process that he referred to as vapor phased catalytic oxidation process is one that was developed at the Belle West Virginia plant of the DuPont Company. They now have authorization, and are in the construction phase of a plant size unit so that it won't be, at least I hope it won't be, too long before additional information will be available. That process is, I think, rather widely adaptable in the chemical industry wherever you have organic material that is in the vapor phase or wherever you have a liquid that can be vaporized. In their pilot plant work they found out that the key to the thing was temperature control. They control the temperature over the catalyst by admitting more or less low pressure steam so that they maintain temperatures within the predetermined range. And it is a low temperature oxidation, somewhere around 300-400°F. If you want more details on that, the fellow that did most of the development work is located at the Belle West Virginia plant. His name is R. V. Green. He will be, I'm sure, glad to supply you with additional information. Copies of the report that he made on the subject are available from the MCA, 246 Woodward Building, Washington, D. C. You can obtain additional information on that particular process if you wish by either writing to Green at Bell or by writing Morris Crass at Washington. Are there questions or comments?

C. S. BORUFF: In the production of some of the vitamins, especially vitamin B_{12}, which is an aerobic fermentation process, the expelled air from the process carries quite a stink. Would this process you refer to work on that?

L. COX: They'll work on that all right. And whether or not you need to control temperature by adding heat or by taking out heat depends on the concentration of the organic matter in the vapor. The reason for controlling the temperature is to avoid burning your catalyst up. You've got that as the upper limit, of course, the lower limit is the temperature at which the reaction proceeds. So you can either add heat or control the upper limit by suitable means, and you initially have to pre-heat the stuff to get started and after that you get enough heat given off so that you can use the off gases to pre-heat the incoming vapors. It works very well and it is considerably cheaper than actual combustion in an incinerator if your concentrations are below about 5 or 6% total organic.

H. GEHM: The steam has to be sulphur free, doesn't it?

L. COX: Yes, sulphur is a poison to the catalyst so there are some chemicals in it that you want to learn about before you try to apply it. Also you need to know what they are using. At the moment I don't have that information.

T. POWERS: The cost of that is very interesting, Lyman. I think it is two cents a pound isn't it?

L. COX: I don't recall what these figures are.

T. POWERS: They are oxidizing organics somewhere in the neighborhood of 2¢ a pound. I think the best figure you can get biologically is about 5¢ a pound no matter what it is; acetic acid or phenols or alcohols.

L. COX: Yes, and there are many instances where in the operation of distillation units, and other units of that sort, you have off-gases or vapors that you condense in one way or another often in barometric condensers. Of course if they get into a watercourse, they represent an additional oxygen demand, so this is really an additional process tool that you can add to your equipment to control or destroy the organic matter. Then too, you have to consider its applicability compared to incineration, and for these weaker liquids as compared to biological oxidation, although if you have any concentration at all this will be very much cheaper than biological oxidation and for those companies that are jammed down in river valleys without land for biological oxidation, it might be a real out. And another thing that Harry mentioned, I think is very important, is this wet combustion. It's the same sort of thing except you carry it out in a liquid phase and you get your results by high temperatures and high pressures. When you get that down on a really practical basis where you can have this heat transfer data and cost data, that may be another tool that will be of great use to everybody that has organic liquids to handle. What is that outfit?

H. GEHM: Dravo is handling it now I think

L. COX: I knew there was some active work going on.

T. POWERS: They don't use any catalysts, Harry?

H. GEHM: Not to my knowledge.

L. COX: No, it's just an enclosed vessel that withstands pressures and temperatures. They do it with straight oxidation.

T. POWERS: With the proper catalysts we've done that at 600 pounds pressure.

L. COX: That would be the advantage of the catalyst you might lower your temperatures and pressure and yet accomplish the same thing.

L. BURROUGHS: Are these processes described in print somewhere?

L. COX: The vapor phase oxidation is described in a paper that Green presented at one of the MCA conferences. You can get that at the MCA office. But I don't know where the other can be found.

H. GEHM: We have a report for distribution on the preliminary works of hydrolysis work and in several months will have a final report on the preliminary work.

L. BURROUGHS: These are strictly for waste disposal.

L. COX: That's right. In wet combustion if you have enough organic, there's an opportunity to recover steam I believe.

L. BURROUGHS: They are not tied down by patents or anything like that are they?

L. COX: This DuPont one, I think has some patent applications on it, but it is the Company's intention to offer it to anybody who wants to use it. They only wanted to fix it so that nobody could stop them from using it.

L. BURROUGHS: I think that is an interesting point to bring up to the Committee. The oil industry has always taken the position that any process which is used strictly for waste disposal and has no economic implications connected with it should be made free for the use of anyone who wanted to use it.

L. COX: That's our general practice too.

L. BURROUGHS: In other words, we wouldn't restrict the use of anything that would help improve stream or air conditions. That has come up quite a number of times, because an oil company may get a clever idea for a waste disposal device and before you know it they have a patent on it. Well then the waste disposal committee makes inquiries and is informed, "Well we have a patent on it but it is not restricted if used solely for waste disposal purposes." I thought that I would bring that up for the information of the Committee in general.

L. COX: I don't know whether this wet combustion process is covered by patents or not. Do you know, Harry?

H. GEHM: No, it's not, but I understand that they have an application.

T. POWERS: How long before they start using it?

H. GEHM: I think about two years.

L. COX: It would seem to be based on well known principles. The only thing that you might get a patent on would be the apparatus for carrying it out.

H. PRENTICE: Harry, did you say that you would have a reprint or something available in about two months?

H. GEHM: We have a preliminary report now which is available upon request, but we will have one covering all the work to date shortly after the first of the year. Anybody is welcome to it.

L. COX: It would be interesting to get this kind of information and you know now where you can get some of the additional details that you would like to have. Our Item 12 on the agenda has to do with Research Tasks and Industrial Waste Disposal. If you will turn to that you will note that there are three sub-topics; The Needs for Research, the Promotion of Research, and Financing Research. I think probably that the needs for research are self-evident in that there are still a great number of wastes that nobody knows how to treat satisfactorily. Just where that research should be done is perhaps more open to question, so I would like to hear comments from the Committee on methods that could be used in carrying out and promoting some of this needed research. We will first start on this as a round-table discussion. Perhaps before we get too far on that we might talk about financing because that is one of the important factors in getting anything done. Some idea on how this sort of thing might be financed was contained in the booklet that all of you have in the back of your folder. I suspect that the number of ideas about this matter will be almost as diverse as the number of people who are here. This pamphlet as written makes it look as if you were getting some nice big grants-in-aid but I suspect that when you look at it more closely that may not be the way it is. It may be that you are spending 30¢ dollars or 20¢ dollars instead of $1 dollars. I would think that this would be a good time to offer any ideas you have about the possibility of encouraging industries to set aside part of this 5% deduction that they are allowed for research of one kind or another, and of course at the moment we are interested in industrial waste research. If you will look on page 2, you will find statements concerning particular activities that have particular limitations on this 5% allowance. In the middle of the page you will note that there are only two conditions your corporation will have to meet in order to be eligible for this Federal subsidy, and I quote this "that total amount of money spent on this program does not exceed 5% of your company's net income before taxes and if the funds be used to assist bonified educational and scientific and welfare activities and organizations, contributions to which are recognized as tax exempt by Bureau of Internal Revenue". And then if you have read the pamphlet, you've seen several examples of how one company or another has made use of that 5% reduction. So let's hear what your ideas are.

E. A. LEONARD: As for the second stipulation that funds be used to assist educational and welfare activities, does this mean that an organization contributing can not specify a particular research project to a university to which they are granting aid; that is, could textile mills giving 3% of income to say Columbia University for carrying out research on industrial waste disposal, stipulate that it be carried out on a certain problem in industrial waste disposal or must it not be specified?

L. COX: I would imagine so, as long as the results of the research were published and were made generally available and were not supplied preferentially to the person making the grant.

D. L. PELLETT: What type of research is done in private industry that is allowable as an expense item?

L. COX: I think anything that is an expense item represents the amount that you don't have as net income and therefore it's not taxable because it is not income.

D. L. PELLET: I know, but isn't any type of research permissible expense if it doesn't result in the creation of a new business or the development of a new product?

L. COX: I think any type of research is probably part of the cost of doing business.

D. L. PELLET: I know, but is it an expense item or is it capitalized?

L. COX: No, it is an expense item.

D. L. PELLET: Well if it is an expense item then what, if it can be an expense in a private industry, is the point of this? It's still expense.

L. COX: It's the same thing, it doesn't make any difference at all.

D. L. PELLET: It isn't the same thing, because done in industry it would be directed toward the support of a specific problem and done as effectively and efficiently as you want to do it.

L. COX: No, I mean the effect on the amount of taxes you pay is the same.

D. L. PELLETT: I mean it's an expense item in either case.

L. COX: I don't mean you can deduct it from your net income, I mean it's part of the expense of doing business and you have that much left of that income.

D. L. PELLETT: Whether it is done as an expense item internally within your business or whether it is a contribution it is still an expense item and will affect your tax return. In other words if you are in the 82% end rate on your tax return any expense item that may come up from there on is in effect an 18¢ dollar. Whether it's an extra employee that you put on the pay roll whose salary is expense or whether it is a religious contribution or whether it's a charitable contribution or so on.

L. COX: I think that's right. Of course that doesn't enter into the calculation of the 5% at least some of them don't. Your contribution would, but your expense items wouldn't.

D. L. PELLETT: Well, there's no limit on the amount of taxable...

L. COX: Oh well, you can cut your taxes to zero if you want to cut your income to zero.

D. L. PELLETT: Yes, that's right, but I mean that there's no practical limit, there's a practical limit but no defined limit as to what you can spend on research.

L. COX: And of course as far as I can see, this idea of it being a Federal subsidy is stated that way by the authors, but...

D. L. PELLETT: It's no more of a subsidy than an unnecessary employee is subsidized to the extent of 82¢ on the dollar.

L. COX: That's the way it strikes me is that you're still spending...

D. L. PELLETT: You're spending what few dollars you have left as expense.

C. S. BORUFF: This subject has been kicked around a great deal in IRI, Industrial Research Institute. There are a few companies that capitalize part of their research. Most companies write off all of their research expenses as cost of doing business. And if you do it that way, which most people do, then this question has no application whatsoever. This deal is just propaganda which is not applicable.

D. L. PELLETT: How did this enter into our agenda, that's what I would like to know. How did it get on the agenda? It comes from a private organization.

L. COX: It is supplied for the information of the Committee, and the reason we are discussing it is to see whether it has any application to the kinds of things that we are trying to promote in industry, namely, more attention to industrial waste disposal and more attention to the development of methods of industrial waste treatment. It may not have any application at all. That is the whole purpose in bringing it up and getting your ideas about it.

E.A. LEONARD: I think that in contrast to what you say there is a value to the public relations end of it, but actually if you can increase the number of dollars that you can say you are spending for treating pollution whether you spend it in your plant or whether you spend it in contributions to another outfit.

C. S. BORUFF: You can still make contributions, grants-in-aid, and charge it as cost of doing business. So you get your public relations.

L. COX: As a matter of fact, one of the things that the DuPont Company does is to support a number of undergraduate scholarships in different colleges and to make grants-in-aid to certain colleges and with no strings attached as to how they use it except that it shall be for research work.

C. S. BORUFF: And that is a cost of doing business?

L. COX: I suspect that is in the nature of a contribution that they take as a tax deduction or a deduction against net income for that purpose.

C. S. BORUFF: It is deductible as a cost of doing business.

L. COX: It's deductible. Whether it is a cost of doing business or not, I don't know.

L. A. DANSE: Well, if it isn't a cost of doing business I would like to know how you figure it. Stockholders can tell you off there.

L. COX: It is done with the idea that the DuPont Company along with all other companies benefits from the training of engineers.

L. A. DANSE: Well, you don't benefit altruistically, you have to pay somehow or other. It has to come. It takes dollars.

L. COX: That's right. Well, as I say I'm not familiar with accounting methods.

L. A. DANSE: You're no more a charitable institution than we are, and if you give somebody some money for something you account for it.

L. COX: That's right, certainly we do. But we make certain donations just as you do that are strictly for charitable purposes. The Red Cross, the Community Fund, the Local Hospital and all sorts of things.

L. A. DANSE: As has been mentioned, you get your good will out of that, you charge it off as a cost of doing business because you are getting good will of it.

L. COX: Well, however you show it on your books, it's still a deduction against gross income when you start figuring taxes and that's what this thing is. It's all, near as I can see, the same thing.

H. PRENTICE: I think that the thing that interested me about this little booklet is on page 21, that table. Maybe I'm wrong. I'm not an expert on tax laws, but it seems to me that the whole point of this booklet has to do with the change of tax rates between '51 and '52. My impression is that "X" company could give another increment or a few more dollars to some sort of research purposes without decreasing the stockholders share. Now, if that's true,--

L. COX: Yes, but it's not true. Part of every dollar you put in belongs to the company and it would be distributed to the stockholders if you didn't put it in.

H. PRENTICE: So, you are still contributing even to this then from the difference of tax rate.

L. COX: Sure the stockholders. He is putting in a 20¢ dollar instead of a 50¢ dollar.

L. BURROUGHS: Well you have the whole book. There are a lot of words said in it but that is the substance of the whole book. It just calls people's attention to the fact that it just costs you $1 out of $5 to do research work. If you want to spend your money on research, you can do it with one of your 30 or 40¢ dollars.

H. PRENTICE: Whereas last year was a little more expensive dollar.

L. COX: I think everybody has a clear conception of this. Whatever you want to do with it is entirely up to you, but I don't think that as a Committee we want to take any action. If any of you feel differently, I would like to have you say something.

C. F. GURNHAM: Well Lyman, I wish I could be a little more enthusiastic about this, because as a college professor I'm one that would benefit by it, but I can't see that this does offer any advantages over standard practice. It may not be out of order though if I do emphasize the fact that all the privately endowed institutions at least, are in pretty tough shape these days. Industry is talking about what they can do to aid the colleges and this is one answer, whether by this means or by some other means doesn't make any difference.

REPORTS OF TASK GROUP CHAIRMEN
FRANK MCKEE -FOOD INDUSTRIES TASK GROUP

Mr. Chairman, we had a very brief meeting last night after the movie and prepared the following report:

The food processing industries have concentrated as fully as possible on the prevention of wastes within the plants and the utilization of by-products for human food, animal food and other products. All of the food industries are engaged in investigating means of waste treatment where necessary. Among the methods of treatment are trickling filters, aeration type plants and waste lagooning. Recently there has been marked interest in anaerobic methods of treatment.

In the fermentation industry, two primary waste treatment plants have been reported, the effluent from which is used for irrigation. One plant has been reported which has provided complete treatment for antibiotic wastes. Treatment efficiency averages 90%.

In the distilling industry, it is common practice to recover all spent grains and soluble solids from the stillage. This represents a great advance over the older methods of operation in which these materials were lost in the plant waste. New uses for these products have been developed. Further waste treatment has been provided by the construction of numerous trickling filter waste treatment plants within recent years where necessary. Some work is being done on an anaerobic waste treatment process. Recovery and treatment of wastes is now practiced by 97% of the industry.

The canning industry has conducted a great deal of research on waste treatment. A lagooning method has been developed which has been found to be economical and efficient. Further work is being done on variations of this process. Spray irrigation also offers considerable promise in waste treatment.

The food freezing industry is similar to the canning industry with the exception that larger volumes of waste water per unit of product are usually encountered. Among the methods used are screening, sedimentation and lagooning.

There have been two new developments in the treatment of meat packing wastes recently. An anaerobic process has been developed which shows promise of offering a quick and economical means of treatment. Pilot plant operations have shown a 90% reduction in pollutional strength. An improved method of grease separation has been developed and is being investigated by the industry.

The beet sugar industry has been active in installing equipment for the removal of suspended solids such as lime sludge in the plant wastes. More plants have installed evaporation equipment for pulp wastes, and several plants are evaporating Steffens waste to reduce pollution.

Further plans for improvement include additional pulp driers, evaporation of Steffens waste and reuse of pulp and flume waters.

The dairy industry has concentrated its efforts on waste prevention and has disseminated the information on waste saving to the industry. Research has been conducted on aerobic treatment of milk wastes. Several plants using the aeration process of treatment have been constructed where necessary.

The corn industry has provided an outstanding example of the effectiveness of waste prevention methods. One of the larger plants in the industry has, through a vigorous waste saving program reduced its wastes by more than 90%.

The fisheries industry has developed a method of recovering soluble wastes from press water which has resulted in a substantial reduction in the discharge of waste.

The poultry industry is interested in development of by-product which will result in a decrease of pollution from that industry.

The food group again commends the Public Health Service for its excellent basic research on stream purification research. It is recommended that their work on the fundamentals of stream pollution be continued. The food group also recommends that the Advisory Board take all possible favorable action to encourage the passage of laws permitting optional accelerated amortization of industrial waste facilities. It is the belief of this group that such a law will be a definite aid in the program of pollution reduction.

LEE BURROUGHS - MINERAL PRODUCTS TASK GROUP

Progress reports have been submitted by five of seven industries represented in Task Group II. The industries reporting are the coal industry, iron and steel, mining, non-ferrous metals, and petroleum. We have had no report as yet from by-product coke or from the gas industry representative. Mr. Setchell was present yesterday but we have been unable to contact him since. The industries reporting are continuing to work actively on their waste disposal problems and I have included with my report here a rather comprehensive summary of the work that is being done in each industry. This information is very much the same as was reported yesterday. I don't feel I should go over it again today. Mr. Chairman, if it is agreeable I will not go over that and the members of the Committee can get the information when the minutes are distributed.

L. COX: I think that is fair enough, Lee, because as you say it generally summarizes the information which was presented yesterday. You now have it in summary form so that you can turn it over to the Secretary for inclusion in the minutes.

L. BURROUGHS: Actually it is quite lengthy. I don't care to go over it all right now. Task Group 2 industry representatives will forward to Mr. Warrick's office information on new and current research and development projects as he has requested. It was the consensus that no approximately accurate estimate of monetary expenditures for research development work could be arrived at for Task Group 2 industries. It was felt that the collection of such information from many units of industry on a uniform basis could not be accomplished satisfactorily.

L. COX: Thank you very much, Mr. Burroughs.

HARRY GEHM - CHEMICAL PROCESSING TASK GROUP

Of the six industries which are represented in this group, five have reported in respect to getting their information into the Public Health Service on research and development work. Of these a good deal of material has been sent in by the chemical industry, paper industry, and a report is forthcoming from Mr. Leonard of the textile industry. Mr. Pellett reported that rubber processing in itself is relatively a dry industry and the rubber industry deals therefore more or less with basic chemicals, metal finishing and other side item waste problems rather than rubber itself, so that no report will be forthcoming on this. No report has been made to date on paint and paint products. The committee came very much to the same conclusion as mineral industries in regard to the matter of obtaining figures on research and development on waste disposal.

In addition the committee last night reviewed the projects contained in the agenda -- projects of the Public Health Service on research -- and discussed these and picked out those which we felt were of major interest to this group, more or less to the group as a whole. One topic which I think was of great general interest were the projects concerned with determination of biochemical oxygen demand. These were three. The seeding process method--determination of the best methods of seeding. The determination of B.O.D. with de-mineralized rather than distilled water which is of much practical interest and value and the matter of the oxygen tension. Not so much from the fact of the basic oxygen tension itself, figures for which are well worked out, but the extension of the dilution range by using water which has been aerated with oxygen rather than air to get a saturation value around 30 parts per million so that with a stronger waste this gives us a wider range. You very often hear complaints from industrial laboratory people using this test as they missed dilution. The group as a whole was very much interested in continuation of this work. Another one that was of great interest was the work as a whole on Lytle Creek. I think there the Public Health Service is doing something that few if any of us would be able to undertake ourselves. While we might have the technical personnel to do it, our facilities are more scattered and here they can concentrate on biological and chemical and other work on a particular stream and we hope that that will be continued and be extended in that little creek for other types of pollution rather than for sewage. Dr. Ruchhoft's work on the separation and isolation of substances from water - this carbon filter concentration method was also of general interest to the group. The toxicity and bioassay work as a whole is naturally a thing of interest to all of us and naturally the group picked this one out along with the rest for particular commendation. The last one that was mentioned was the membrane filter. Now the group is not particularly interested in this prospect from a waste standpoint but they certainly are from a water standpoint. We all have water treatment and water treatment problems and this has been a very outstanding piece of work and when we get a control test of this kind that can be speeded up we have made a real step in the advancement of water control. We feel that certainly that work should go on. In addition there were a couple of recommendations made for new work that might be undertaken by the Public Health Service where they could be of general service to our group. Mr. Powers made a particular point -- we need better control tests - tests that an operator can run - can run quickly in the plant. He says that perhaps we spend too much time on refining methods of analysis. Another recommendation was made in respect to the determination of threshold values of organic substances - known organic substances. The committee felt that there was very limited information on this and the Public Health Service could perhaps do some work in this direction and act as more or less a clearing house to the industry for odor evaluation work. For example, if you have a new compound, suspect that it might increase or add a disagreeable taste to water, this threshold value for it could be established by the Public Health Service investigational group. I think, Mr. Cox, this concludes the report.

ROY GREEN - GENERAL INDUSTRY TASK GROUP

The fourth industry group is a general group -- the catch-all for industries that do not fit into other categories. It appears at the present time that research projects in water pollution abatement follow the same general characteristics, that is we seem to come up with projects that do not go into a general category but seem to slide into some of the other industry classifications. With one or two exceptions of the six industries in this group that is quite true. The automotive industry, one of the group, - one of the industries in the group, we of course had this report submitted yesterday - that is the one exception. The second exception is possibly in electrical equipment manufacturing. We may come up with some unique problems in that category. For the rest of them lumber, the NAM, power production group and the railraod groups we have very few so far indications that there are unique problems in those particular industries. As I indicated yesterday in my general report, most of these groups have such a diversity of industries or companies, types of manufacture, that the water pollution problems that are being worked on fall rather in other industry groups about which we have already heard. Now there are such things as projects being carried on as have already been mentioned in the Ohio River Valley Water Sanitation Commission on phenol wastes, while those are not unique to any particular industry in this group. Accumulative sub-lethal concentrations of industrial wastes on humans and animals, project of the Kettering Laboratories and methods of analysis on metallic ions at Lehigh University. The question of water standards of the University of California. The California Water Pollution Control Board is working on a project, an analysis of water quality standards. It is a question to me where that fits in to this particular group but we plan to get more information on that and at least request that it be listed. The railroads - Mr. Teal and others report a study now in planning processes to investigate chromate removal from diesel cooling water and several other projects of a nature being carried on by State groups such as the Illinois water survey here in Urbana who are in the process of cataloging industrial water uses with a secondary project under way to determine what the various waste water problems are in each of those industry groups. They are in the process of cataloging. This then is more or less of a progress report and when we get some more details on these general projects that we can get ahold of the report will be submitted to the Public Health Service.

ACCELERATED AMORTIZATION

L. COX: This matter of accelerated amortization as provided in House Bill 5474, I suspected most of you have read that and recognize the fact that it simply speeds up the rate at which you can depreciate equipment at the owner's option if he meets certain stipulations which are that the State Water Pollution Control Agency certify that it is beneficial in the State's water pollution control program and I believe also the stipulation that the Public Health Service certify that it fits in with the country's comprehensive water pollution abatement program. What it does is let you write off in five years time rather than some longer period funds that have been invested in treatment facilities.. I have heard many expressions of opinion. Most people, industry groups, conservation groups, State control agencies, interstate agencies feel that passage of such legislation would speed up work on water pollution abatement. About the only group that opposes it as far as I know is the Treasury Department. They seem to have been rather successful so far in blocking it. With that brief introduction to the matter of accelerated depreciation I would appreciate hearing your views and also whether or not it is felt that this Committee might appropriately take action one way or another on this particular piece of legislation.

R. GREEN: Mr. Chairman. May I comment on this.

L. COX: Certainly Mr. Green.

R. GREEN: About four years ago I became very much interested in the predecessor bills to this one and worked very actively on behalf of our industry with many of your industries to stimulate the passage of this legislation, so I am familiar, for a period of four years at least, with the principles back of this and past efforts. It is interesting to me that the same principle appeared in the Defense Production Act which we are all familiar with which provides for accelerated tax write offs for new construction when it is to the interest of the National emergency. Also you have probably read in the press that there have been literally thousands and thousands petitions filed under that particular part of the Defense Production Act. There have been a lot granted. This report of Mr. Warrick's in May indicated a thousand at that time and probably a good deal more. There is a great resistance in Washington for passing any more because of a lot of political considerations. Now with respect to 5474 although I haven't been in on the meetings there have been meetings of industrial groups in Washington on this bill with a view of ironing out any discrepancies in ideas or opinions and trying to arrive at a common interest in the language of this bill and subsequently to support it. So there is an active group and I think most all of these industries represented at those informal conferences are heartily in favor of this principle and will work to get it passed when it is introduced. Now the third thing I should like to speak of is the question whether this Committee should go on record as supporting a piece of political legislation. I don't think we should. However, I feel that we might well express a sentiment or an informal opinion that it's the sense of the meeting rather than formally go on record as resolving that this bill be passed.

I think there is a slight difference in connotation. The reason I feel like that is because there is now an active industrial group in Washington of a lot of industries trying to get this bill in Congress passed. I don't think our interest is being neglected. The last thing I feel, as Mr. Roach and other members of the food group do, is that if they wish the people in the United States to clean up the waters of the United States quickly and efficiently this is the way to do it. I think that no better move can be made in that direction than the passage of this bill. However, I am pessimistic for its passage because of the history that has developed in reference to the Defense Production Act tax certificate exemptions that have been filed. Those are just some background thoughts to start the thing boiling.

C. S. BORUFF: Mr. Chairman: We discussed this thing last year, did we or did we not pass some kind of a resolution on this matter?

L. COX: I don't remember. Do you remember Lou?

L. F. WARRICK: We did not.

C. S. BORUFF: The consensus was in favor of it but I don't believe we acted. I don't think there is any question around the table that this thing is good. It's a question of policy whether we should resolve something or not.

L. BURROUGHS: How would any action that we might take be handled after we took the action? Lou what would be the possible course for any action?

L. COX: Yes, what could you do with it?

Unidentified: What could you do with it other than write your respective Congressman or something on that order?

H. GEHM: That's already being done as these gentlemen have pointed out. There's an active campaign on this thing. We don't have to assume either that all industry is so much in favor of this. There are quite a few in our industry that feel that it will result in the building of numerous monuments and are not highly in favor of it. The majority is, and I know the pulp and paper industry is taking action in that direction.

D. J. ROACH: There has been a lot of discussion on that subject and other discussion that hasn't been mentioned here, but I think that basically it is, as has been brought out here, one of the real means of rapidly accomplishing what we are trying to do. Now you take old plants, a new plant is designated today to a considerable extent, to take care of the wastes, but we have thousands of plants that were built 10, 15, 20, 30, 40, 50 years ago in which the cost of taking care of the wastes is going to be almost as much as building a new plant and any management will hesitate and will almost be put to a point of being forced to make these expenditures when there is no way of working them into their amortization. Now our amortizations, for instance, are on a forty year period, general forty year write-off. It makes a lot of difference in the work we do whether we can amortize that particular thing in five years or whether it is going to take forty years.

C. S. BORUFF: Mr. Danse, would action taken by this Committee help the Planning Board?

L. COX: I think that we would be safe in saying the consensus of the Committee is that this type of legislation would generally increase the rate at which pollution abatement facilities were installed. Does anybody else have any comments then on this particular?

A. J. DAVIDSON: On the question of whether this Committee should stand behind certain proposals or legislation brings up the thought that there is no other organized industrial waste group that could express industry's opinion.

R. GREEN: I first of all would question the advisability of a group of this kind going into this fight as has already been mentioned. I just want to add the information that the Chamber of Commerce people and my organization, the NAM, both on the National and State level have been quite active on this piece of legislation. Both of those organizations have official policy positions recommending its adoption and I might say that they have been quite active in the Washington way to promote interest in this piece of legislation.

H. GEHM: Mr. Green, the outlook for legislation of this type is extremely dismal, is it not?

R. GREEN: It is.

H. GEHM: The paper industry has had a number of these things kicking around for years like taxes on woodlands and things like that. It all goes along pretty well until the tax department scrutinizes it. They look on this with a bilious eye because they feel it would open the door for a whole stream of similar things.

R. GREEN: My point was Harry that this is the first time I know of that the groups like the Chamber of Commerce has taken such a decided interest in a question of this kind and I know for sure it is the first time the NAM has gone into it.

L. COX: Well those are both nationally known and nationally recognized industrial groups. They presumably can do a better job of speaking for industrial management than this group can which is a technical committee largely concerned with the problem of water pollution abatement.

C. F. GURNHAM: Mr. Chairman, if there is to be any general newspaper releases on this meeting that might be an appropriate place to put something on this subject.

L. COX: I think from what's been said there would certainly be no harm in saying that as a principle the Committee favored it without the formality of adopting any kind of a resolution unless you fellows feel that we should ask our Committee on Policies and Procedures and Resolutions to draft us such a resolution for our consideration. If you want that done I am sure that Dr. Hoak will be glad to write one. What's your pleasure? Does anybody want to ask for a vote on the matter or just drop it?

H. GEHM: I think maybe we are talking about two things. We are talking first about legislation and also about review of reports recommending legislation.

H. PRENTICE: I'd like to see NAM and the Chamber also bring in this problem of labor unions and farmer's groups if we want to get some backing. That is just an off the record comment. I know how difficult it is to do it too but it would help really.

R. GREEN: I might say we have a little difficulty getting the labor unions to join us in any undertaking.

L. COX: Item 15 on the agenda, Industrial Waste Guides, for our information we would like to ask Hayse Black to give us a little talk about the present status and offer suggestions as to how this Committee can assist or cooperate with the Public Health Service in the preparation of such guides. Mr. Black.

HAYSE BLACK - INDUSTRIAL WASTE GUIDES

The Secretary has divided this into four parts. I should like to move section B down to the last, the Task Committee Assistance. We can comment on it last. In making this verbal report I should like to preface these comments with a few brief statements having bearing on our approach and objectives. At the outset in considering these guides some two years ago the question came up as to whether we could depend on review of the literature or whether it meant doing some field work to supplement literature. It was decided that the latter approach was preferable and that is the basis on which we are working.

It was most gratifying to me yesterday to hear that three or four members of this Committee have drafted revisions of existing Ohio River Guides. I am thinking of dairy, distillery and meat packing guides. I am particularly interested in the distillery guide. That goes back to 1936 when I was doing some work with Dr. Boruff in Peoria and in Pekin.

The beet sugar guide was distributed at the last meeting of this group. It has now been revised and we have incorporated suggestions from a number of this group, from the industries and from the State stream control agencies. It is now in final form and has gone forward. I believe that each of you has a copy. It mentioned the approach, getting back to that for a moment, in these field studies we hope to correlate the waste with the conditions in the receiving stream. Three of these most recent studies have included studies of the stream along with the waste from the industries. That gives us some notion of the capacity of that particular stream to assimilate those wastes and it also introduces some problems usually that we can refer back to some of our other people at the Center. Another reason for these field studies is to get away from what actually might be, aptly termed graphite solutions. We certainly don't want in these finished guides to be criticized for rehashing the literature.

The other three guides are in various stages of preparation. The one on wood naval stores waste, which I have here, is a first draft and has not been reviewed by the industry because of the absence of one of the key men on a foreign assignment. With that review, we may decide to do some more work, if not, this piece of work would be considered essentially complete.

We have completed now our field work on integrated steel mills and we are dividing that into two guides; one on blast furnace and rolling mills, and the other by-product coke, a revision of the existing guide. We will have a number of additions in the by-product coke revision and some changes. The blast furnace and rolling mill's guide will include such information as comparison of the pressure top blast furnace with the standard top pressure which has some bearing on solids losses in the blast furnace flue gas. We are interested in oil and mill scale in the rolling mills. There hasn't been too much information on that in literature. We have some data on that to offer. Those two guides are in the course of preparation.

These studies were mentioned briefly yesterday by one of the members of the Committee. They are cooperative studies arranged through our basin office and the State agency where the industry is located and in cooperation with the industry. We feel that these projects, which may last for a month or six weeks ending up with a report of a comprehensive nature, are of mutual benefit to both the industry and the Service. In preparation of the guides, there is no identification of the plant studied. By studying several plants, we hope to cover the range. By careful selection of these plants we also hope to have at least one plant that will give us a goal toward which others might strive.

We are anxious to have in the finished guides a concise statement of the conditions that exist, certainly a definition of the problem, and some notion as to what can be done to correct the problem. I hope that in the review of these guides by the Committee that we will uncover unpublished data that might not otherwise be used. I feel sure that this will happen.

As to Task Committee assistance, I don't think that we can expect this group to tell us exactly what we should work on or where we should work. We certainly would welcome suggestions and constructive criticisms and above all please show us wherein the work that we contemplate in the planning stage might overlap with something that is being done by industry or another group. In our immediate future planning, we are thinking of continuing work with the pulp and paper industry in study of kraft and semi-chemical wastes. That work was started last fall and was temporarily suspended. We are anxious to resume that work. We have in mind doing some work with citrus wastes in the South. We have given some consideration to working with synthetic rubber inasmuch as the National emergency has caused that production to get back almost to where it was during World War II. The present production is about 760,000 long tons annually and will shortly be 860,000 long tons. There are reported to be only two plants now producing butadiene from alcohol and the economics is such that as soon as the stock pile is built up in all probability those plants will either be shut down or their production will be reduced. We are interested in styrene and some of the other wastes associated with synthetic rubber manufacture. I think I have covered the four points, Mr. Chairman.

L. COX: Hayse, what do you have in mind for any of those groups in the petroleum industry? Would you expect for instance when this MCA program on manual preparation is completed to perhaps consolidate that data into a single manual or would you simply like to have those copies for reference?

H. BLACK: There is no question but some wastes lend themselves more readily to this type of treatment than others. The chemical industry is so vast in its ramifications that any guide on the chemical industry waste would have to be grouped.

L. COX: That, of course, is the reason that we have broken it down into some five or six general waste classifications with a manual for each type as I described yesterday. As far as the petroleum industry is concerned I would think that those API publications would constitute waste guides as they are presently constituted and certainly if revised as now planned.

H. BLACK: An attempt was made some 10 years ago to prepare a guide on the petroleum refining industry which I think both Lee and Dr. Giles feel now is inadequate. Dr. Hoak?

R. HOAK: In Hayse' statement about the manual in preparation reviewing the wastes of the steel industry, he mentioned grease from rolling mills. Just recently I learned of a possible method for handling such waste. A representative of Johns-Mansville called on me and reported some pilot studies that had been made on a waste of that kind somewhere in Pennsylvania. The waste from the rolling mill contained 80,000 ppm of suspended solids and about 16,000 ppm of grease. That material was passed over through a sparkler filter precoated with Hiflo Supercel, a diatomite filter aid. The effluent was completely free of suspended solids and the oils had been reduced to 30 ppm.

L. COX: Thank you very much.

H. GEHM: How much filter aid did they add?

R. HOAK: No figure was given, but I was under the impression that it was not excessively high.

L. COX: Are there other comments about the industrial waste guides beyond the fact that they have been useful documents to have when in need of that kind of information?

BIBIOGRAPHY

L. COX: Our next item of business is the discussion of the bibliography that has been in the course of preparation, a bibliography based largely on information that this Committee has supplied which Mrs. Fulmer has been working with and for which she has been trying to devise a card index system that would make the material readily available either to members of this Committee or to other people in industry who have need for that kind of information and if you have studied your agenda carefully you know there are two cards in here; one, Form A and one, Form B. I would like to ask Mrs. Fulmer to describe these briefly and see if there is Committee sentiment for one form versus the other or for still further revisions in this method for accumulating information.

M. FULMER: There are several things to be taken up in regard to these punch cards before work can proceed on them. First, the matter of form. I think you can see fairly well from the two sample cards in the agenda, the two types we finally decided on. They are very similar. With Form A you have to use a key and with Form B you don't have to use a key. That is the major difference between the two. The items that are included on this card were distributed to the members last April. We have several comments from members and the suggested changes have been incorporated on the revised card.

L. COX: Do you have comments as to which card you prefer?

E. A. LEONARD: I prefer Type A, myself as it gives more space for abstracts and descriptive material.

L. COX: You can refer to a key more easily if you have it on card. I notice that under pollutional effects there is no mention of dissolved solids.

M. FULMER: The information that is on the key will be printed on the cards so that if you did want to expand any of these items greatly I think you would have to change the design of the card. You will notice on the left hand side of the card there are three spaces for optional things you might want to include on the card. The Public Health Service has already considered using that space for biological research. There is room for three additional items under plant changes but if you had more than three things to add you would have to include more holes there.

C. S. BORUFF: In the fermentation field I notice that you have covered distilleries, breweries, wine and yeast. The two new fields in fermentation that are becoming quite active are antibiotics and vitamins both produced by fermentation. Considerable work is being done and such work is yet to be done in each of these two fields. I would like for you to consider, inasmuch as there is no more room for new subjects, the possibility of throwing all fermentations into one division.

M. FULMER: But there is room for two subjects there. There is room for seven new subjects. There are 39 blanks and 32 subjects.

C. S. BORUFF: What is the young lady's recommendation - after all she has studied this much more than any of the rest of us.

M. FULMER: The one on which everything is written out seems to me to be of some advantage because anybody can pick it up and use it. You don't have to bother with a key, but this isn't such an advantage that is necessarily outweighs the advantages that you mentioned.

L. COX: What I was thinking of that you might want to do would be to start off with Form A and then after you have used it a while, you might then be in a position to develop Form B a little more fully.

M. FULMER: I see. You think that all the items might not all be printed on the first time. That is a good idea. We will go ahead with Form A then.

L. COX: Do you have any further questions about these cards? Will somebody make a motion which form we start out with?

Unidentified: I make a motion that we use Form A.

Unidentified: I second it.

L. COX: Mrs. Fulmer is requested to start a file based on Form A. Those in favor of the motion signify by saying "I", oppose by saying "No". I believe you had another matter which you wanted mentioned, namely, the cost of the cards.

M. FULMER: At the Cincinnati meeting we felt quite sure that we could make a charge for these cards - charge everybody who received a set. We have run into difficulties. At the present time, probably the cheapest and easiest thing for everybody would be to have the Division of Water Pollution Control finance the first set of cards. By the time this first set is ready and distributed, it is probable that we will be in a position to charge for the cards. We are sorry that arrangements have not been made yet, but it is quite a difficult thing to do.

L. F. WARRICK: Just for further information of the Committee you recall our legal counsel at the last meeting at Cincinnati discussed the angle of permissive legislation. There was passed in August such permissive legislation to make a charge for such a service. Now that requires in that legislation that some uniform system be established by regulation. Accordingly the actual procedure under which such charges would be made will be to wait for adoption of such regulations which properly apply to all Government services. In the interim however since that would needlessly delay this program, the Division of Water Pollution Control would undertake to finance and send to the members of the Committee here these cards to build up a file and make this, too, available for Task Committee use. That is the present status but it is only the present status. We will probably have to make a charge whenever the regulations are prescribed at a later date.

L. COX: The charge then will be for complete new sets or additions to an existing set?

L. F. WARRICK: For additions to existing sets as I understand it.

L. COX: That seems to be pretty well shaped up then. Are there any questions or comments? One thing I might add is that the value of this to all of us will depend on how much material we turn in. The most valuable kind of course is information that has not already been published. That could be very good. You'd have to supply not only a reasonably good abstract but also a reference of an individual or organization where this information can be obtained by anyone interested in obtaining it.

E. A. LEONARD: I would like to ask one question, Mr. Chairman. In sending in the survey results do you want us to code them, or will you do that, or will your office do that in Washington?

M. FULMER: It would really be better if you could code it yourselves.

E. A. LEONARD: Well then I think that we should have circulated an up-to-date list just as soon as we can, including all of the things that we agreed on today.

L. COX: Yes, that's a very good suggestion. Because with the key you can assist in seeing that things are properly punched by coding them when you send them in.

C. F. GURNHAM: Would you make this key that you are going to circulate the detailed one that we suggested?

M. FULMER: Yes, with the additions included.

C. F. GURNHAM: Yes, but also make it much more descriptive than a single word.

M. FULMER: Would you like me to include an example of each type of idea?

L. BURROUGHS: I think it ought to be pretty descriptive, because I know that if we were to write in and ask for material that you had on addition, I would like a rough idea of what I was going to receive.

M. FULMER: We will include an example of each type then.

OTHER TECHNICAL TASK COMMITTEE ACTIVITIES

L. F. WARRICK

In discussing this item of our agenda, it would be helpful to refer to Task Committee functions:

The first function of our Committee is "To inventory, appraise, coordinate and promote research and development work on utilization, treatment and control of industrial wastes." We are endeavoring to do that through our survey and other means that have been discussed at this meeting. A good start has been made.

Function number two is, "To facilitate securing uniformity in methods of measuring and evaluating trade wastes in water quality control." The methods of measuring and sampling of wastes described by Mr. Black and the development of the carbon filter described by Mr. Ruchhoft, are items that are directed toward attaining this objective. How can this Task Committee facilitate getting information of this type to those people in industry that could use it in waste studies and control procedures. It would be helpful to get your ideas and suggestions as to manner of dissemination as well as steps in stimulating the use of such information. Can this be carried out to best advantage by promoting special projects through our Task Groups?

Function number three is, "To stimulate more effective working relationships on technical phases of the work of improving the quality of waters between Industry and Federal, State, and local governmental agencies." Steps have been taken in this direction. A question that this Task Committee might well be considering is what our suggestions could be relative to objectives of water quality which various agencies are currently endeavoring to develop. It is a long time project, unquestionably, but this Committee might further consider steps to develop and present some ideas along this line from the point of view of industrial water quality needs.

Function number four reads, "To help point up the activities on industrial wastes of the Environmental Health Center." You have been given an up-to-date review of current research at EHC. You have received a poll sheet on which it would be appreciated if you would jot down your estimate of the comparative value of the various projects to your industry, and the type of project which should be given high priority. Your comments and suggestions are welcomed by the staff. The aids that can be extended to good advantage have been summarized as follows:

1. Comment and advice on Environmental Health Center programs,
2. Literature reviews and preparation of annotated bibliographies or abstracts,
3. Assistance and participation in the preparation of industrial waste guides,
4. Suggestions for Environmental Health Center programs to assist in establishing problem priorities and locations where maximum results can be realized from field studies.
5. Contribution of information on water quality objectives or requirements of industry, and

6. Support of work, by industrial research staffs, on chemical and other analytical methods.

We have been discussing this matter of financing, covered under function number five. We need to find ways in which we can stimulate to better advantage than we have to date, the carrying out of essential research projects. It is hoped that the Committee will come up with some constructive views which will help do this job. Development of joint research projects, and procedures for financing work on common problems between Industries, might profitably be explored.

We are all concerned with function number six, "The stimulating of further adoption of these methods." You'll notice that one of the task sections has listed the talks that have been given and the dissemination of information that the task section is carrying out. It is believed that it is highly valuable, and if the task groups covering the various branches of Industry could make a digest of the informative work that they are doing, it would be helpful in presenting the over-all picture of the Task Committe endeavors in getting the work around to Industry and the public on what is being done, what the current practices are, what good housekeeping methods can be applied and are urged and recommended by the various sections, and what waste reductions are being accomplished. Illustrations are desirable. It would be very helpful to have a digest of such information.

Under function number eight, we have in-service training activities. We have already covered the instructional work that is being carried out by the Environmental Health Center. From reports, that seems to be meeting a definite need and to be helpful. Such work doesn't necessarily have to be carried out entirely at the Environmental Health Center in Cincinnati. It can be decentralized as the need develops. Courses can be held in other sections of the country, and the scope of the work can be expanded. It is emphasized that this is not an academic course; it is an orientation program covering practical procedures in dealing with water and waste problems. This plan of having Government and Industry representatives participate is just in its infancy. The EHC wants to get your advice and suggestions, not only as to modifications in course context, such as obtained from the reports that come in from the men that attend, but also your ideas as to how courses can be made available more to individuals from industries. Will holding these courses at other locations be helpful? These are just some items that are presented in line with the functions of this Committee on which it is desired to have the benefit of your thinking, ideas, and suggestions.

L. BURROUGHS: Mr. Warrick, I would like to add one thought in connection with what you said about training. It is quite simple in many cases for the top brass of various companies who contribute to stream pollution to provide adequate facilities to abate that pollution. But all too frequently these same high up people in these companies do not give the proper attention to the people who operate the equipment. We have found that in the oil industry particularly, that many of the operators of this equipment are not properly trained. We may have a series of oil-water separators, which are of the very latest design, but if those separators are not properly operated, if the operators are not fully instructed as to how to operate that equipment, the equipment will not give good results. I think it would behoove all of those present here to perhaps stress that point within their own organizations. After all it is just as important to properly train people as it is to provide facilities for waste abatement.

L. A. DANSE: We have found that what Mr. Burroughs has said is just as true in municipal treatment plants as it is in industrial treatment plants. We are using every effort within our means to try to influence all authorities to recognize that situation and remedy it.

L. COX: One way that can be accomplished in industry is where you have a central engineering department with people who devote their time to industrial waste disposal. A part of their job would be to put the equipment into operation and see that those who are to run it are properly instructed and have before them operating procedures that they can use as a guide. And that is some of the work that the group I was formerly with does carry out. If they put in any kind of waste treatment facility then it is up to them to see that it goes into operation, and the people who will run it will not only learn how, but have enough follow up so that you can see that they continue to run it properly, and continue to accumulate the kind of operating data that's needed to see that it is going all right and which might be needed for future expansion.

L. A. DANSE: I still think that Mr. Burroughs has a good point, because immediately he gets an operator well trained, and I go down to Wood River and steal the operator from him and bring him up to Detroit: then what does the fellow do with the oil separators? This goes for municipality and district treatment plants just the same as it does for industry treatment plants. I think it's an excellent point for this group to lay a lot of stress on.

L. COX: I am not doing anything more than agreeing and saying that here is one way in which an industrial company can accomplish that purpose.

L. A. DANSE: Yes, but we don't. That's the point that Mr. Burroughs brings out.

L. COX: I'm saying that we do. It varys from one company to another.

L. A. DANSE: Then our steel cousins have wings which we don't possess in Detroit. I am not ready to be transfigured, we don't perform that way.

L. COX: It can be done. That's all I'm saying.

L. A. DANSE: Sure it can. Mr. Burroughs is pointing out the need for us to tell management that it should be done.

L. BURROUGHS: The point I think Lyman had in mind was that top management should be very desirous and anxious to correct the condition. About as far as they can go is to provide the money and facilities. The training of the operators falls at a level down quite some distance below those that provide the money for the facilities. Too frequently I have seen cases where you have shift operators, you have shift breakers, you have men on vacations, and you have a series of things that come up in connection with the operation of this equipment and will put inexperienced men in charge of it, men who have not been properly grounded in the problems of operation of this equipment. This will vary of course, within the industries and the plants, but the main point I wanted to bring out was just to stress the point of proper training of the people who operate the equipment.

L. COX: It certainly is a very good point, and I do think it is necessary. Thank you.

H. GEHM: We have been cursed with the same thing. In looking over the situation and trying to help, we find that generally the difficulty is that the man has been told what valves to turn, and to turn them on some sort of schedule, but nobody ever told him why. When you spend some time with him and tell him how it works, and why you do certain things, and when it should be done, on the basis of effects or the purpose, then you get good results.

L. COX: You also get an employee that is a lot better satisfied too, and he is a lot more interested in the work he is doing.

T. POWERS: An experienced engineer might have to work with an operator for a week.

L. COX: Of course, Tom here has had considerable experience of that sort in the operation of waste treatment plants, and I suppose he runs into that problem of training operators just as everybody else does. Are there some other comments on some of the things that Mr. Warrick has pointed out, and some of the things that he has suggested? I think all of us have a problem of communication. In other words, in any one of these groups you get information, and then you have the problem of not only getting it to other people who are on the same committee, but in trying to see that they get on down to a company level where it will actually be used.

L. A. DANSE: Again Mr. Chairman, I would like to expose my abysmal ignorance and ask another dumb question. Yesterday Mr. Burroughs and I worked up a discussion relative to water versus air pollution. I submit to Mr. Burroughs and to the assembled group one of our problems in pollution is odor. I would like to ask if you consider odor a water pollution situation or an air pollution situation?

L. COX: Of course, in Dr. Gehm's remarks reporting for the Task Group III, Chemical Industries, he stated that one form of research that we were very much interested in was the determination of odor thresholds. It was for the specific purpose of preventing water pollution in that that would be data that would let you know how much of the given compound could go into a watercourse before you cause taste and odor difficulties in municipal supplies.

L. A. DANSE: I still submit, Mr. Chairman, pardon me for interrupting, that the odor is air carried not water carried. It is not a water pollution problem.

L. COX: Where didthe odor come from, Mr. Danse?

L. A. DANSE: It comes from the air. My nose can't get down in the water and smell it, at least it doesn't customarily.

L. COX: It got out into the air because there was enough of it in the water to make it depart from the water.

L. A. DANSE: It's still an air pollution problem when it gets to my nose, the same as particulate matter that falls on my eyelashes and gets into my eyes and blinds me. I submit that we're going to have a struggle if we insist on dividing air pollution and water pollution. We are going to have to consider them jointly on many occasions and with relation to many problems, and it doesn't behoove us to insist that we are going to deal only with water and not with air, because odor is air carried. It isn't carried by ether vibrations and it isn't in the water. When it gets to my nose it is up in the air.

L. COX: Where do you find the cure to the problem?

L. BURROUGHS: I haven't said anything except my opening statement yesterday on the subject, but I would like to make a couple of remarks. I can't say that I agree with Mr. Danse. I feel that we either have an air pollution problem or we have a water pollution problem. It is quite true that you can take an air pollutant and you can scrub it out and make it a water pollutant, or conversely you can take a water pollutant and strip it out and make it an air pollutant. Now you have one or the other. If you have water pollution, then you have a water pollution problem; if it is air pollution, it's an air pollution problem. I think that these items which are listed on page 16 under research, occupational health measures, and if you will go down and take a look at them, you will find the first onc electrostatic precipitation. The second one;

development of air filters, dust investigations, dust abatement, dust abatement survey of Chicago. The next one, the Iowa State College removal of dust from gases. The next one, coagulation of dust by ultrasonic vibrations. The next item, air pollution in Louisville, and so forth. Study of flour mill dust sampling and so forth. I contend that those are not a proper group of subject for this Committee to consider. Now there may be some marginal cases, but I think that they are very very few. I believe in the case of water which smells so badly it pollutes the air so you can smell it in the vicinity, I believe there you have an air pollution problem. Now the correction lies with doing something with the water. But you are not polluting a stream, you are polluting an atmosphere. Consequently, any study of that should be a job of an air pollution group not a water pollution group. Now if that same water kills fish, then that water should be studied from the standpoint of what it is doing to fish in the water. I believe that we are going to find ourselves in considerable difficulty if we attempt to draw a line as fine as Mr. Danse has indicated to separate the two. There is one way you can draw a line of demarcation as I have outlined. I believe that if we do it on that basis we will stay out of trouble.

L. A. DANSE: Yes, I agree with you perfectly that it is a matter of degree and not a matter of kind. I'll go along with you on that. Your idea that we have difficulty trying to divide it on a basis of degree I think is probably all right. I just wanted to get that much in the record, because yesterday it appeared that we were on the record that we would never consider anything with regard to air pollution. I don't believe that should be in the record and I want it clarified. I agree with you perfectly on this part of our business. I had the same comments and will be glad to second the proposal of those comments. I don't believe this group can go on record and say that they will never consider a problem of air pollution.

R. HOAK: In support of Mr. Danse, I would like to say that there is adequate precedent for committees concerned with stream pollution problems to handle air pollution problems also. The pollution abatement committee of the Pennsylvania State Chamber of Commerce, of which I have been a member since it was organized, has been asked to include air pollution in its studies. The industrial waste disposal committee of the American Institute of Chemical Engineers has also been asked to handle air pollution problems.

L. A. DANSE: And we just have to trust our own good judgment that we won't go too far in the direction that Chairman Cox points out.

R. HOAK: That's right. I agree with Lee's criticism of these health studies--they are certainly beyond our purpose. They have no connection with the things that we are doing. But there are other instances in which they do definitely bear upon the problems that we are organized to consider.

L. COX: I take it then that we are actually in agreement, although we have brought up some varying points of views.

L. A. DANSE: No, we brought up basic principles, not points of view, we're in agreement with points of view.

H. PRENTICE: Mr. Chairman, I support your conclusion.

L. COX: Well, at least this is the sort of discussion we need in this group.

L. A. DANSE: Otherwise, we'll get in a groove. What one man thinks becomes a habit, when he tells it to someone else it becomes a custom, when they tell it to a third man we then call it tradition, and God help us when we get in that kind of a rut.

L. COX: And once it gets published, it's a standard.

L. A. DANSE: We don't want standards, all we want is reasonable usage objectives, not standards. Theoretically I'm just a guest here, but I'm one of those doggoned mean guests. I just won't stay in my place.

L. COX: As a matter of fact, we very much appreciate your comments and participation in our discussion, Mr. Danse.

L. COX: Are there other comments under Technical Task Committee Activities that we might start considering at this meeting?

L. A. DANSE: Yes, I think two of the gentlemen here have just voiced something which is in the backs of all of our minds. That is this item of going ahead and continuing the discussion on the traditional basis of stream standards, or water purification standards, or do we want to discuss ways and means of achieving reasonable usage of waters? I think that we have gone too long and too far, talking about stream standards, or water standards, or any standards. What we want is better methods of control, what we want is better methods of analysis, or some other means of finding out what the trouble is, but I don't think that we want to continue talking about standards. The standards vary. They have got to be flexible, if they don't vary, if they aren't flexible, they become dogmatic and lose their usefulness. We are certainly interested in reasonable usage objectives, but we are not interested in standards.

L. COX: Anybody want to argue with that point of view?

E. A. LEONARD: I agree with him. I hadn't heard a word mentioned until just now.

L. COX: Well, it was mentioned earlier, in fact, Mr. Warrick in talking about some of these functions had an idea that the Committee might want to consider water quality standards. In talking about Item 3, "to stimulate more effective working relationships on technical phases of work for improving the quality of waters, between industries, Federal, State, and local governments," he mentioned the matter of water quality standards.

L. F. WARRICK: That is the term that is often used in State legislation.

L. A. DANSE: Pardon me, sir, for interrupting you, it is often misused and abused.

L. F. WARRICK: Some prefer to describe it as striving toward objectives of water quality from the standpoint of water uses.

L. A. DANSE: Right. Reasonable uses. The objective is all right in reasonable usage. You talk about standards you again become dogmatic and useless.

USE OF SEWERAGE SERVICE CHARGES IN FINANCING DISPOSAL OF INDUSTRIAL WASTES

L. COX: Item 18 on our agenda is a discussion of the use of sewerage service charges in financing disposal of industrial waste. The thing that led up to the inclusion of that item in our agenda was a letter that I received from Arthur J. Fox, Jr. who is assistant editor of "Engineering News Record." It is a fairly brief letter so I will read it to you. He states "We are interested in making a survey of charges made by sewerage agencies for treatment of industrial wastes," incidently he addresses this to me as Chairman of the MCA Water Pollution Abatement Committee, "and I felt that in your capacity of Chairman of the Committee of Manufacturing Chemists Association you would be able to help. I would like to find out what the basic industries are paying to have their wastes collected and treated. It seems that there is a wide range of charges made and reasons for the great divergencies may be of interest. What industries pay for treatment of their own wastes and what treatment is given for these charges is a story that we would like to learn and to tell. We are also interested in what individual industries must pay to treat their own wastes as compared to what they might pay public agencies to do the job for them. How should I go about getting answers to these questions in your industry? Do you have them or can you provide a list of persons whom we could query with a brief questionnaire. I intend to approach Harry Gehm with the same proposition on the paper and pulp industries, and wonder whom I should contact in the metal working, textile and perhaps food industries. Any assistance that you can give at this time will certainly be appreciated. Then I shall no doubt be in touch with you again as our survey crystallizes." I wrote back and told him that there was a central committee in which the various industries that he mentioned were represented and perhaps this subject might more properly be considered by the NTTC and asked if he would write to Lou Warrick and give him a bit more information. I also have a letter which Mr. Warrick wrote Mr. Fox under date of October 2. It is as follows: "Dear Mr. Fox: Your recent letters relative to service charges for treatment of disposal of industrial wastes along with domestic sewerage, have been given careful consideration. I am sure that members of our NTTC will be interested in this subject and accordingly it is planned to obtain their comments and suggestions at the next meeting. Unfortunately we have had to defer the meeting initially proposed for this week until a suitable date in November. Accordingly, I am not in the position at the present time to give you the summarized views of the group. It is believed that you will find a booklet on sewer rentals, published by the Institute of Local Government, Pennsylvania State College, Pennsylvania, of interest and assistance to you in covering this topic. In this booklet you will find set forth advantages and disadvantages of sewer rentals or service charges with examples of procedures employed by Pennsylvania municipalities. This in brief sets forth the advantages of a sewer rentals as follows: 1. Funds can be provided continuously and adequately to insure efficient operation and best service. 2. The source of revenue will not be in direct competition with other more popular budget items. 3. Each user will pay a fair share of the cost in accordance with his use of the facility. 4. Taxpayers not served by sewers will not be required to pay for maintaining this service for others. 5. Funds will be limited in use for the purposes intended. 6. The sewer system can be made self-liquidating. 7. Sewer rentals may aid a municipality in relieving its dependence upon the real estate tax. On the other hand the disadvantages of sewer rentals are as follows: 1. It is difficult to gain public approval for sewer rentals unless a new system or new sewage plant is being constructed. 2. Sewer rentals require additional clerical work, added expense, and involved administrative complications. 3. Some property owners prefer to pay one bill for all taxes than have a separate bill for sewer service. 4. Property owners may delay making a connection to the sewer in order to escape service charges. Compulsion often has a bad public relations effect. 5. Service charges cannot be billed until the sewer connection is made and the sewer is ready for use. Any delay in construction may postpone the receipt of funds thereby throwing an unexpected burden on other sources of revenue. 6. Some complications in sewer rentals are unavoidable and a residential community may not be able to distribute sewer costs among property owners any more equitably than present costs of government are distributed. 7. The entire community should bear part of the cost of operating the system. Various examples are listed of the different methods that have been applied in establishing sewer rentals and references made to problems involved in adequately measuring service rendered to industry. A number of procedures have been employed, particularly in the mid-west for defraying cost of trade waste treatment on an equitable basis. The charges that have been established are covered in the publication on sewer rentals by the American Municipal Association, 1313 E. 60th St., Chicago. For instance in handling packing wastes in Iowa a charge was established based upon the hogs killed, as the loading on the system was roughly proportional to the number of animals slaughtered. There are also a number of references to rental charges on trade waste in back issues of the Sewage Works Journal. Information on practices in charging for industrial wastes was assembled during the past year by the Chicago Sanitary District. You would probably benefit by talking to Chief Sanitary Engineer for the district, Mr. Langdon Pierce, or the Chief Chemist, F. W. Mohlman. They have given considerable attention to the industrial waste problem in Chicago. It is noted that you expect to attend the forthcoming meeting of the Federation of Sewage and Industrial Wastes Associations in St. Paul. At present it appears unlikely that I will be able to see you at the meeting due to recent developments. I will be glad, however, to talk with you on this matter in the event that you will be able to visit Washington enroute. Cordially yours, L. F. Warrick." So that will bring you up-to-date on the approach that Mr. Fox made first to me and then to this Committee in his efforts to put together enough information so that he could write an article for Engineering News Record on this matter of sewer rentals. That also explains the inclusion in this agenda of the article which Schroepfer presented at the recent meeting of the Sewage and Industrial Wastes Association. As I read this, it seems to me to offer quite a lot of useful information but for the purposes of this discussion I would like to have you offer any comments that you have concerning this general method of financing municipal sewage and sewage treatment facilities. Whether you consider the sewer idea to be basically sound or whether you think that some other method of financing the thing is more appropriate, I am sure that some of you have had experience with that type of rental in some of the towns and cities where your industries operate.

C. F. GURNHAM: Just as a matter of interest who is George J. Schroepfer?

L. F. WARRICK: He is a professor of engineering at the University of Minnesota.

L. COX: His report refers to studies that were made by some group that was particularly interested in the subject and I don't know whether Fox needs to write an article or whether enough has already been written. I don't know enough about the literature.

Unidentified: May I ask if you are referring to this report which was reprinted by the Ohio State Law Journal and from which Schroepfer drew his information? I believe the committee is made up of representatives of the ASCE, the people appointed from the Federation of Sewage and Industrial Wastes Associations and the American Bar Association and possibly some other groups.

L. COX: It would appear that this ground has been rather thoroughly covered and that Lou in his letter has already given him a number of references.

Unidentified: I think that was very excellent.

L. COX: I think that the idea of trying to proportion the costs according to the use of the system is pretty good, but as this article points out there are other factors to be considered.

E. A. LEONARD: I might suggest also that Lou's letter is a very helpful summary of it and if there is no objection, it would be good to circulate copies of that.

L. F. WARRICK: That is written into our minutes. Do you mean to produce it separately?

E. A. LEONARD: Yes.

H. PRENTICE: Do you want another example of where this has worked?

L. COX: I would like to know generally what you fellows thing about this method of financing sewage treatment works.

H. PRENTICE: One of our companies has completed an arrangment with the city of Decatur, Illinois, on a gallonage basis for discharge of waste into the city sewerage system. That may not be unique but it seems to be working pretty well and that's a big problem with the city of Decatur with a relatively small lake with which to work.

L. BURROUGHS: I would like to know whtat the usual procedure is in a large city such as Chicago or New York or Cleveland, or any large municipality where a small industry, say like a tomato canning factory or something or other, sets up a plant within the city limits and proceeds to use maybe two or three hundred gallons a minute of water and discharge a great deal of organic material into the sewers. How are those things handled? Are they allowed to do that without any restriction or does someone come around and say "now, look you are plugging up our sewers, we haven't enough room there to take care of the drainage." How are those things handled generally? I don't mean in any specific case, but in general are you permitted to do that?

L. COX: I think that generally most cities have some sort of an ordinance that limits the amount of certain kinds of material they will accept without pretreatment. Usually the city retains the right to reach an agreement with the industry as to whether the waste is acceptable or not, so that on a mutally agreeable basis you enter into a contract with the city to take so much sewage of certain quality and if you have to pretreat it in order to reach that quality then that's what you do. You not only reach an agreement concerning that but also an agreement concerning rates. And this thing that we are talking about is simply a basis for establishing that sort of thing.

C. S. BOHUFF: Just what you have said, Cox, has been put into operation at the Lederle plant where they make antibiotics, wherein they treat partially according to an arrangment with the city and then the partially treated effluent goes to the city plant with no additional charge to Lederle. On the other hand I know of another deal in a good size city where the sanitary district felt that pollution that a brewery was putting into the sewer exceeded the proportion of taxes that they were paying, therefore, the district worked out a "mutually satisfactory" treatment fee arrangement.

L. BURROUGHS: There seems to be no equitable means of handling this thing as far as I can see.

L. COX: That's what he is trying to get at. I think that is the part Fox is interested in and since combined treatment is important to us, it is also important that industry not abuse the uses they can make of city facilities and therefore some of the factors that enter into it should be considered.

F. MCKEE: Mr. Chairman, I can cite one example that worked out very well in our case in which it was necessary to enlarge the city sewage plant. The consulting engineer of the city first made a quite extensive survey of three industries in this particular town, determined the amount of pollution from each, then determined the cost of constructing the addition for the city sanitary sewage alone and then the cost for the city sanitary sewage plus the industrial waste. He then took that incremental cost, divided it by two and then divided that amount among the three industries in proportion to the amount of pollution from each. In that

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particular case it was a very satisfactory arrangement for all concerned.

L. COX: In the usual case, I think that facilities that are built new with the intention of financing them through the sewer service charges carry enough of a charge so that facility or the capital investment is amortized over some period of time, say like thirty years or maybe forty years. You have a lot of things that can be done. What is suggested in this report is that a part of the cost be based on either land values or front footage charge and above that a surcharge be made to industries that wish to have their waste treated and that would take into account not only flow but certain factors of quality, for example BOD, suspended solids, perhaps even chlorine demand. The city of New Brunswick, N. J. operates a system pretty much on that basis with fairly good results except they don't have enough plant and are now working toward the construction of a trunk sewer and a new treatment plant in the Raritan River Valley. Dick, how do they plan to handle that thing in Pittsburgh under the Allegheny County Sewer Authority?

R. HOAK: John Laboon has worked the thing out on a formula basis that I haven't in mind at the moment. It is included in a report prepared several years ago for the County Authority. It's the same sort of thing that George Symons developed for Buffalo, but some of the factors are different. He has prohibited the discharge of certain kinds of industrial waste to the sewer system, among which is pickle liquor. The plant that has been planned for Pittsburgh will be initially a primary treatment plant. I can't see why anything more elaborate than primary treatment will ever be needed at Pittsburgh, but nevertheless, the Department of Health has in mind requiring complete treatment at some future date. In the event that complete treatment was installed it would almost certainly be the activated sludge process, and everyone is familiar with the difficulties that arise when iron is present in sewage in excess of a certain limiting concentration where this process is used. While a limited amount of pickle liquor could be accepted in the sewer system without difficulty, it appeared best not to take any pickle liquor rather than to set some arbitrary limit. It seemed to be the best way to avoid arguments in the future.

L. COX: The thing I am trying to find out is if whether enough study is already going on in this field and whether enough information has already been developed, so that we don't particularly need to fool with it, or whether it is a matter that is of sufficient importance to industry that we should perhaps set up a subcommittee to review the matter carefully and then come out with some principles concerning sewer rentals that we could all agree on.

R. HOAK: It seems to me that the Joint Committee Report is sufficiently flexible, that there is no particular reason for this Committee to concern itself with rental charges or the basis for determining them since we have this very useful material available to us. Schroepfer points very clearly to a number of alternative methods for arriving at an equitable charge.

L. COX: Well, that's more or less the view I take after looking over the information that we have here and I think we can simply suggest to Mr. Fox that he review Schroepfer's article and certain of the items mentioned in the bibliography and use that as a basis for any article that he might want to write.

T. POWERS: A very great interest along that line right now will be the dealings between Gary and the steel company on that ammonia still waste, and I am very interested in how that is going to come out. If they don't reach an agreement then I think that we should take an active interest in that, because they should reach an agreement.

L. COX: The danger that industry faces is that there will be more and more of a tendency on the part of municipalities to exclude industrial waste as they propose to do in Pittsburgh for one or more types of wastes. As far as the city is concerned, they are free to decide whether they will accept industrial waste or not; also whether they will accept all industrial waste, or if they will define what they will accept.

C. S. BORUFF: Here is another angle for the record. I know of one city that needs an expansion of their treatment works very much. They put it up for bond issue and it was turned down. Now that city or that district is taking a look at industry as a source of revenue to take care of their immediate situation, namely, the need of building an extension to their plant.

L. COX: Well, unless there are other comments on this subject I think that adequately covers it. If any of you have problems that you would like to discuss at this meeting on the general subject "Industrial Wastes and Stream Improvement Problems", this would be an appropriate time for it.

INDUSTRIAL WASTE AND STREAM IMPROVEMENT PROBLEMS

E. A. LEONARD: I would like to mention one, Mr. Chairman, that may have a bearing on our approach to many of these things that border on policy. Many industrial wastes are of such a character that they are tied in with the marketing and salability economic balance of by-products which can be recovered from the operation of waste treatment. I take as an example, the recovery of lanolin from wool washing wastes. There has been at the Wool Bureau a series of meetings, I think three to date, concerned with that problem and the main deterent to many more companies putting in treating facilities for removal of lanolin from their washing wastes is the great instability of the market for sale of lanolin and similar products. At the present time there is a market for all of the lanolin produced, which runs 14¢ to 20¢ a pound depending upon the particular type and whether it is extracted by acid cracking or centrifugal systems. There is only estimated to be about 10% of the grease recovered which could be recovered if all of the industry did it, and it is quite well known that the limiting market is only about 50% more than what is now recovered. In other words, the market would fall far below the salability of the wool grease today. I would like to ask the opinion of this Committee: shall we consider an industrial waste to be a problem of disposal if it is one of economics and sale of the by-product recovered, or merely a question of whether it can be technically removed at some cost, whether it be a loss to the company's operating system or not? I would like to open that up for a little discussion and expression of opinion.

L. A. DANSE: Mr. Chairman, that's been discussed at great length at Advisory Board meetings and the legal interpretation is bound to take precedence over the economics. Economics is very important to us as industry, but the laws, starting with Public Law 845 and going through the State laws, are quite specific in many cases and they leave us no alternatives. We can express all the opinions and wishes and desires that we want to, but that doesn't alter the laws. Our discussion of the economics and the desirability of it from an industrial standpoint is in order, but it isn't in order for this group to discuss an interpretation of the legal aspects. We have to watch out that we don't get beyond our depth on that.

L. COX: As most of us know, what Mr. Danse has just said is quite true. That the objective of water pollution abatement, particularly by the control agencies is to protect the waters for reasonable and necessary use, and of course, they're not anxious to do that at the expense of chasing industry out of business, but nevertheless, it doesn't matter whether it has to be done at all cost and no recovery or whether valuable by-products can be recovered. If it causes pollution and interferes with use, it has to be corrected.

E. A. LEONARD: I wasn't questioning the interpretation or the modification of legal requirements by economic considerations, but to what extent do we as a technical group consider the economics part of the problem of treating the wastes in question?

L. COX: Of course, one of the things we will try to do is to exchange information on treatment methods that work. And if they return a profit, well then we are all the more interested in hearing about it. So it would be, so far as I can see, in the same class of anything else that reduces pollution, something that we would be interested in.

E. A. LEONARD: At the Wool Bureau meetings, representatives of the Research Marketing Administration of USDA discussed plans at that time to take a market research survey for uses of wastes and the Eastern Regional Research Laboratories of the USDA have taken up a research project on possible applications not known today, based on segregating components of wool grease and trying to find uses for these materials. That work is still going on, and if anything, it is probably going to lead to more expensive rather than less expensive recovery and treatment processes.

L. COX: Who else has a topic that they would like to discuss under this general heading of industrial wastes and stream improvement problems?

R. HOAK: It would be worth-while considering for the long term some constructive action dealing with dissolved solids. I know of no more expensive and difficult problem to solve in industrial waste treatment than proper handling of dissolved solids. We know that there is a maximum tolerable limit (about 500 ppm.) beyond which most forms of fish life do not thrive. Actually a fresh water fish put into water of a high total solids concentration can be dehydrated through osmosis. Damage to fish life, of course, is only one of the problems that arise through a high concentration of dissolved solids. We're particularly concerned with soluble salts of calcium and magnesium but sodium sulfate for example, in high concentration causes priming and foaming in boilers. There are many other soluble constituents, some that are toxic, not only to fish life but to humans, and other that cause a variety of difficulties. One could easily propose the simple but economically impractical solution of installing ion exchange equipment. This is one problem that we are going to be faced with increasingly in the future, and it seems to me that it should be an immediate concern of this Committee.

L. COX: I expect most of us are in the same shape you are as to how to attack it. There appears to be a very limited number of things that you can do. Tom Powers knows about as much about them as anybody. He puts some of it underground, he stores some of it for controlled dilution, and I don't know what he does with some of the rest of it, but where you have large quantities of soluble materials it poses, as you say, a very serious problem.

L. BURROUGHS: There is only one answer and that is to keep material from getting into the water. In that case you have to go back to the source. Because once you get it into the water you can't get it back out.

R. HOAK: Lee, let me suggest this to you. What would you do where you had a hydrochloric acid pickle liquor which had to be neutralized? What would you do with the calcium chloride that would be present in the supernatant from such treatment ?

L. BURROUGHS: Well, you have to treat the hydrochloric acid probably in some manner. I wouldn't attempt to be a consultant on the subject, but perhaps there may be ways of recovering the hydrochloric acid economically. There may be electrolytic methods.

R. HOAK: There is a process that works in the laboratory, but there has been no success on a commercial scale. Theoretically, it should be relatively easy to decompose the ferrous chloride and get back hydrochloric acid which could be distilled off azeotropically and returned to the picklers. The iron oxide could be used for some purpose or other. But there are technical problems involved that make that a rather unattractive solution.

L. BURROUGHS: Well, the only answer that I could give you there, Dick would be that if the material is sufficiently objectionable in a stream, you have no choice except to keep it from going in there. I know that there are a great many of us up against that same situation.

R. HOAK: Well, this may be of interest to the group. Rham & Haas have been carrying on some laboratory experimentation on complexation of ferric chloride with one of their resins. It appears that ferric chloride, as a molecule is adsorbed on certain resins. It can be washed out with plain water as a regenerant. The problem lies in the difficulty of oxidizing the ferrous chloride to ferric in a strongly acid solution. The development of ion exchange has been broadening so rapidly over the last decade, that the possibilities in that field appear to be relatively unlimited. It may be that will supply the eventual solution to the problem of dissolved solids. Perhaps some cooperative study should be undertaken by industrial groups. It might be a desirable way to focus attention on methods for solving that particular difficulty.

L. COX: Are there other comments on the question that Dr. Hoak has raised? Or are there other subjects that you would like to discuss?

H. PRENTICE: I would like to raise one if I can. This has nothing much directly to do with industrial wastes, but at the January meeting in Cincinnati one of the things that interested me greatly in our tour of the Environmental Health Center was learning about some experiments and findings that a great possible pollution problem was the drainage of insecticides and pesticides and fertilizers into the streams. I wonder if there is anybody from the Environmental Health Center that could give us perhaps an up-to-date view of anything new in that area. That's getting to be quite a problem in American life generally, not necessarily in stream pollution, but I meant the use of insecticides, pesticides, fertilizers in the raising of foods of all kinds.

L. A. DANSE: Well, if you ask Carl Schwob, he can give you some information that was disclosed up at Escanaba at the Outdoor Writers of America meeting, where they set up a new committee of Outdoor Writers to start a campaign on herbicides and insecticides and rodenticides, because of the effect on wildlife; and not only organic life but botanic wild life. Those fellows are a very potent force in American Society and are beginning to make that force felt right now in the chemical industry. I tried to sort of forestall the thing by introducing a resolution to the effect that a committee be appointed to meet with and to deal with the Manufacturing Chemists Association, in order to call their attention to their responsibility in manufacturing and marketing those materials; insofar as the effect on wildlife and I almost got myself crucified. I got myself snowed under, because the sentiment was to campaign the thing very aggressively for direct amelioration and not to attempt to deal with any educational processes. Those fellows may be appearing on Capitol Hill and asking for a new phase of control legislation that may make Public Law 845 look like a sack of peanuts.

C. E. SCHWOB: What led to this thing originally was that there was quite a fish kill down in Alabama. Chemicals were being used there for the control of boll weevil. Rains washed the chemicals into the streams and finally the concentration got so high it was killing the fish. There was fear that the water supply of some of the towns nearby might be contaminated and the Health Department asked us to investigate the situation, so we sent our Basin engineer and our Basin biologist over from Atlanta. Lou Young and Dr. Nicholson wrote a paper on the subject. Lou, why don't you see that it is sent to those who are interested in that particular thing? It was published in The *Progressive Fish Culturalist* for October 1951. I don't know, of any other case like that, but as Danse said, the boys up in Escanaba were really worked up about it. They said they were going to do something about it, and were not going to let such things happen. The thing I tried to do up there, after L. A. got himself very thoroughly disliked by some of the boys, was to urge that they work with their State pollution control agencies and with the people manufacturing the material and see what can be done. I think it is another example of a case where, if you can get the control agencies, and the people that are manufacturing the material, and the people who are affected all together around the table, you can work out a solution.

L. A. DANSE: Mr. Chairman. As a guest here I would like to request that you ask that a motion be made to the effect that this group go on record with the Outdoor Writers' Association of America, that the subject has been discussed here today, has our attention, is on the agenda, and we would love to cooperate in doing something about it in a constructive way.

C. RUCHHOFT: I would like to contribute just one note on this issue of toxicity of insecticides. If you look in the "Review of the Current Research of the Environmental Health Center" in the section on biology you will find an abstract on toxicity of insecticides. And in conclusion, it states that it is not planned to publish this but that the mimeograph report is available, so we can send that to any of you who are interested. That's on page 16.

L. A. DANSE: Dr. Ruchhoft, could you see that a copy goes to J. Hammond Brown, President of the Outdoor Writers of America? Be sure that Carl Schumacher has a copy of it too, with a notification that it has gone to Hammond Brown.

C. E. SCHWOB: Mr. Chairman: There is another thing that might be of interest along this same line. Dr. Simmons in the laboratory at our Communicable Disease Center is doing considerable work along this same line, toxicity of insecticides, and, Lou, you might check into that and see what there is down there that might be of interest to these gentlemen here, because he has done a lot of work with that. He started out with DDT originally, and then has gone to a lot of the other insecticides, the effect not only on plant and animal life but on humans as well. That might be of direct interest to you people in the chemical manufacturing industry.

T. POWERS: Does this report that you spoke about, Carl, tell which of the insecticides are responsible?

C. E. SCHWOB: Yes, that's right.

L. F. WARRICK: The three insecticides in the case of the boll weevil were the benzene hexachloride, toxaphene and aldrin. The Communicable

Disease Center has a mimeographed list of toxicities of these various insecticides, rodenticides, fungicides, and if you like, we can see that it goes to all members of the Committee.

C. E. SCHWOB: Lou, you may be able to fill in more on that thing down in Alabama than I. You were down there.

L. F. WARRICK: Yes, the seasonal conditions had a lot toward building up the concentrations in the waters. They had stormy weather at intervals every other week or so, where there were considerable amounts of these insecticides washed into the streams. Instead of building up additional dilution, actually each successive storm built up the concentration of the material and while the recommendations of the Agriculture agent and others involved called for possibly ten pounds per acre, it wasn't unusual to find them applying on the theory of "if a little was good, more would be better" concentrations two, three, four, and maybe five times the recommended amounts. Consequently, some of the fields were treated eight or ten times. Well, they practically wiped out the fish life in those streams in the cotton growing areas, particularly those in the Tennessee Drainage Basin. Apparently that action persisted for some months after the conclusion of the season, because fish coming up from the Tennessee system migrating up the streams exhibited these same toxic characteristics when they got into the areas where evidently there were substantial amounts of the insecticides still remaining in an active condition in the bottom muds. Many of them were bottom feeders that came in there and, of course, they were exposed immediately to whatever residual effects were continuing.

L. COX: Thanks, Lou. I think with this additional information and, of course, recognition of the fact that ...

F. McKEE: I don't think that this is an industrial waste problem.

H. BLACK: Mr. Chairman, I think this needs a little clarification. This is a manufacturing problem also. One large manufacturer in one of the Southern States went into production on toxaphene in April. Within a matter of hours, there was a major fish kill in the receiving stream. The conclusion was obvious.

L. A. DANSE: Gentlemen, you can side-step this if you wish. If you do so, you'll regret it. I think you should take some positive action and not try to hide behind anything. You can take negative action if you choose, but you'll regret it if you do. Any action which is positive, will be better than negative.

R. HOAK: I agree with Mr. Danse that we would lose nothing by offering cooperation with the Outdoor Writers of America. But we might lose considerably by ignoring such questions. It has developed in this meeting that our scope of interest is likely, in time, to be very much broader than it appeared at first. We may as well recognize the situation now and be prepared for it.

L. A. DANSE: If you limit yourselves now, your scope will grow gradually less. You have to realize that you are either going to go forward or backwards. There's no standing still in creation. He who tries to stand still is going downhill, that's all. If you rest on your oars, you are just drifting.

T. POWERS: Insofar as the chemical manufacturing industry is concerned, it seems to me that this comes within the product use responsibility, something that perhaps we haven't recognized. We're getting into it in various things like pentachlorophenol. Along with our labels on some of our products going out, we are going to have to include, apparently, their toxicity to fish as well as their toxicity to humans. I think that this is definitely along that line where the chemical manufacturing industry will have to notify its customers just how and where this material cannot be used.

L. COX: Well, that's right, I think, Tom, but under the organization that MCA has, that type of problem is ordinarily considered by their labels and precautionary warning committee, or something like that. It has to do with labeling and instructions that are involved in the use of products.

L. A. DANSE: Gentlemen, you can handle the problem that way and that will probably be the proper channel, but I think you can make a gesture and it will be as the Frenchmen say "beau jeste". I think you had better make it now while you have time. You will live to regret it if you don't. If you don't do anything else, just tell these fellows that you have a conscience and you are trying to live by its dictates. You are not promising to fix anything; you are, as Dr. Hoak says, offering cooperation, information and advice.

L. COX: What we need now is a suggestion from some member of the Committee as to a statement that could be issued on behalf of the Committee. A statement to be considered for an affirmative vote or rejection by the Committee, according to your wishes. Mr. Danse, would you like to see if you can shape up a brief statement which would then be considered by the Committee?

L. A. DANSE: I would be glad to, but I believe it would have much more effect if it came primarily and directly from the Committee rather than from me.

C. S. BORUFF: You're the one that's pushing it, Mr. Danse. You propose something and then one of us will introduce it.

L. A. DANSE: I offered you such a thing when I requested that someone on the Committee make a motion to the effect that this subject has been discussed, is on the agenda, and is being considered. If there is anything that this group can do in a constructive way to cooperate in the solving of the problem, that they'll be glad to help.

L. BURROUGHS: I will move what Mr. Danse said.

C. S. BORUFF: I second the motion.

L. COX: A transcription of Mr. Danse's motion or suggestion of motion reads as follows: "Make a motion to the effect that this subject, a matter of toxicity of insecticides, herbicides, and what not, has been discussed, is on the agenda, and is being considered, and if there is anything the Task Committee can do to cooperate in a constructive way in the solving of the problem, they will be glad to help." Mr. Powers has written out an item which reads as follows: "The National Technical Task Committee hereby instructs the task force of chemical processing to alert all insecticide manufacturers to their responsibility for informing users concerning the high toxicity of various compounds now being used and which have resulted in wholesale fish killing in certain areas." Which one does the Committee prefer?

L. A. DANSE: I would like to see Mr. Powers' suggestion as a separate motion following the one which Mr. Burroughs made. I would like to see them both go through. I think they are both very good for the record.

L. BURROUGHS: Do you have to use the word "wholesale" in there? Couldn't you use "retail" or some other word?

L. COX: To consider the motion which is before the group, may I ask Dr. Hoak to write this on the board where we can see it as someone may want to revise some of the wording.

Dr. Hoak wrote the resolution on the blackboard and read it:

> "It is moved that the subject of toxicity to aquatic life of insecticides and related compounds having been recognized, it be placed on the agenda for the next meeting of the Task Committee. It is further moved that the Secretary of the Task Committee be directed to inform the Outdoor Writers' Association of America of its willingness to cooperate in solving the problem."

L. COX: The motion has been made by Mr. Burroughs. Is there a second? Mr. Boruff seconded the motion. It has been moved and seconded that the Committee adopt this action. Is there a discussion to the motion?

E. A. LEONARD: Placing it on the agenda for the next meeting doesn't seem to be the most positive action you could take.

L. COX: If they ever find out that we only have about two meetings a year, it is not going to look very good.

R. HOAK: In reference to the second motion, they can also be told what that is.

L. COX: Are there suggestions for amendment or discussion concerning the motion?

E. A. LEONARD: I would say that it has been placed on the agenda for the subcommittee on chemical manufacturing.

H. PRENTICE: No, I think it makes it more simple and better the way it is right now.

L. BURROUGHS: We could word it, "placed on the agenda for discussion at next meeting" although I can't see that it adds anything.

R. HOAK: I think that would detract, Lee, "on the agenda" means something more than discussion.

L. COX: Are you ready for the question? Will those in favor of the motion please signify by saying "I". Those opposed by saying "No". We will have a count. Will those in favor of the motion please hold up their right hands?

UNIDENTIFIED: Count alternates?

L. COX: This had better be by vote of representative only. The count is eleven. Will those who are opposed to the motion please raise their hand. The count is seven. Eleven for and seven against. The motion carries. Here is another motion for the consideration of the Committee, which I will also ask Dr. Hoak to write on the board so we can see what it is.

Dr. Hoak wrote the motion on the board and read it:

> "The National Technical Task Committee on Industrial Wastes hereby instructs the Task Group on Chemical Processing to alert all insecticide manufacturers to their responsibility for informing users concerning the high toxicity of various compounds now being used, and the damaging effects to aquatic life which have resulted in some areas."

C. S. BORUFF: I went along with the first motion purely from a public relations point of view. I don't think that it is any business of this Committee, but I went along with it on a public relations view. Now, we are starting to instruct producers and so forth as to the activities of some of their compounds. Some group might instruct all of the distillers to tell their users that drinking is a dangerous thing; the petroleum people that gasoline causes accidents, therefore, neither alcohol nor gasoline should be used. The beverage alcohol people know about the compulsive drinkers and the alcoholics and so forth. The gasoline people know about dangers of gasoline in high speed cars and accidents. The producers of these materials are aware of their misuse by some. I am very much against this sort of a motion, both the way it reads and the policy involved. I think we've gone far enough in the first motion.

L. COX: Is there further discussion?

L. BURROUGHS: Yes, I would like to support what Dr. Boruff says, because I feel that publicity of this sort tends to crucify a segment of industry unnecessarily. I think we are all in a fix similar to what is indicated by this motion, and it would be wrong to put this sort of information out generally available to the public.

L. COX: Is there further discussion or further comment?

L. A. DANSE: I appreciate the sentiments of both Dr. Boruff and Mr. Burroughs, and I think that they are quite right as a matter of principle. I quite agree with them that this thing should not be given publicity. On the other hand, Dr. Boruff's industry certainly puts out a lot of signs that drunk drivers go to jail, and Mr. Burroughs' industry puts out a lot of publicity to the effect that gasoline can be a very dangerous weapon, just as we do in the automobile industry. By both kinds of publicity we probably help the accident rate somewhat, and we certainly make some people think who wouldn't think of their own volition. So, I believe that it may be, if this was for our own internal consumption and not for publicity, that just the fact that Mr. Powers has proposed it and that the Task Group considers it, is all that is necessary. After all, we're not proposing that this thing be written to the Outdoor Writers, necessarily.

L.BURROUGHS: Are you proposing that this thing be done and not made a part of the minutes of this Committee? In other words, let the Task Group go ahead and do this without any publicity?

L. COX: There's no point at all in adoption of such a resolution except for publicity purposes, because the chemical users are already aware of this, as a matter of fact have issued a fair amount of information about it.

L. BURROUGHS: It isn't the wrong thing to do, any more than put out a paper saying that an automobile is dangerous.

L. A. DANSE: Tom, what do you say? After all it's your motion.

T. POWERS: It's going to be done anyway, but whether you want to tie it in with this other one for action.........

L. A. DANSE: Personally, I would love to, but there are several who seem to be against it.

L. COX: Of course, this originally was an alternate to the other motion, and we're considering it now as the possibility of adopting it in addition.

C. S. BORUFF: I agree with Mr. Danse that it's an industry matter so let's leave it with the industry.

L. COX: There was in this case no second to the motion. Is there a second to the motion which appears on the board? In the absence of a second the motion dies.

L. COX: Are there other subjects that you would like to discuss under the general heading of Industrial Wastes and Stream Improvement Problems? Item 20 gets us to some of the matters of business that we need to consider. I am going to alter the order of ABC and ask that Dr. Hoak report for his committee on policies, procedures, and resolutions. Dr. Hoak.

BUSINESS ITEMS

Policies and Procedures

The Committee on Policy and Procedures, consisting of Alex J. Davidson, Wm. A. Hazlett, and Dr. Richard Hoak, Chairman, presented a report. They reported that the policy statement prepared at the Cincinnati meeting did not merit any changes at this time. They submitted a revised statement on procedures for consideration. In the discussion of this statement, some revisions or amendments were suggested from the floor and accepted by the Committee on Policy and Procedures.

It was moved and seconded that the following procedure as amended during the discussion be adopted:

1. Organization of the Committee shall remain as simple and informal as will be consistent with implementation of its policy.

2. No regular meeting shall be scheduled. Meetings shall be called by the Chairman whenever, in his opinion, or on the advice of the Public Health Service, or any subcommittee, sufficient material is available to warrant discussion. As much of the business of the Committee as possible should be transacted by correspondence.

3. In general, frequency of meetings shall be governed by quantity and urgency of matters requiring discussion. All material for discussion shall be supplied by members of the Committee to the Secretary, or other designated individual, within twenty days of the request therefor by the Chairman. The Secretary shall compile and issue an agenda within fifty days of the date of the Chairman's initial call for material and meetings shall be held within two weeks thereafter.

4. In case of an emergency, meetings may be called at the discretion of the Chairman.

5. Officers of the Committee shall be a Chairman, a Vice-Chairman, and a Secretary. Officers shall serve for one calendar year, or until their successors are appointed. Neither the Chairman nor the Vice-Chairman shall succeed himself or herself. They may be re-elected to these positions provided at least two calendar years have elapsed between terms. The Vice-Chairman should succeed the Chairman to that office, but this shall not be mandatory. The Secretary shall be a representative of the Water Pollution Control Division of the Public Health Service. He or she may be elected to successive terms. If the office of the Chairman be vacated by resignation or death, or inability to serve, the Vice-Chairman shall succeed, and the office of Vice-Chairman shall be filled by appointment. If any office other than the office of the Chairman shall be vacated by resignation or death, or inability to serve, that office shall be filled by appointment. The

appointee shall be selected from the Committee membership by the remaining officers. He shall serve only until the next regular election. The offices of Chairman and Vice-Chairman shall be rotated among the various task groups. Those offices shall not be held at the same time by representatives of the same industry. Voting and election shall be restricted to industry members of the Committee.

6. At each annual meeting for which election of officers is scheduled, the Chairman shall appoint a nominating committee which shall propose a slate. Following submission of the committee report, the Chairman shall call for nominations from the floor. In the event of a contest for any office, voting shall be by secret ballot.

7. Chairmen and secretaries of task groups shall be selected annually by these groups themselves.

The procedure was adopted.

Resolutions --R. HOAK

The committee was not invited to prepare any resolution, but when the Chairman appointed the committee, he said that it should also cover resolutions, so we thought we had better go ahead and draft some anyway whether you want them or not. Three of these resolutions may not please everyone, but I think they all raise certain points. For that reason we worded them with some care. The first resolution has been anticipated by the last sheet that was passed out by the Secretary. It covers just the kind of thing that was mentioned in those last two mimeographed sheets which you received. It reads as follows:

> "Inasmuch as this Committee represents a diversity of industrial interests, and all members do not have access to Federal legislative proposals and reports bearing on stream pollution and water policy, the Committee requests that such material shall be provided by the Division of Water Pollution Control."

Following a discussion on the ways and means of obtaining legislative information, the motion was made for adoption of the resolution. The motion was duly seconded and passed.

R. HOAK: Suppose we pass on to the next item. I think everyone is sensible of the criticism of various forms of governmental extravagance. Those who wish to seek it can find wasteful use of public money on every hand. Our suggestion that publication of unnecessary and irrelevant material be discontinued may not cut much money out of the Federal budget, but it is at least a step in the right direction. The second resolution reads:

> "Documents pertaining to stream pollution and industrial wastes treatment have been prepared by, from time to time, the Public Health Service. Certain of these have been written in a rather

hysterical and propagandistic style, and some have been printed in expensive format. The Committee opposes extravagance of both language and expense in such activities."

E. A. LEONARD: I believe that would be more suitable as a communication rather than a resolution of the Committee. I don't know of any specific incidence, could you state one?

R. HOAK: The most recent document, this one, has been commented upon as not the most useful way to spend public money. The thing that strikes me about many of the items that I see coming from the Government lies in the fact that for the most part they are being sent to people who don't need to be informed about such matters. Now here is an item that carries a price tag of 75¢ which I assume was sent to each member of the Committee. This kind of thing may very well serve a useful purpose in certain instances. Certainly, it is rather wasteful to send an item of that type to a Committee of this kind. The only thing that we are trying to do is to suggest that money doesn't grow on trees. One of the guiding principles in the EJC report on water policy was that money is limited in availability. A variety of public functions compete for public money. Now the idea there is: Should we build a dam or a highway or a school; what's better, a peach or an apple? I would be glad to hear some comments on this subject. This isn't deprecatory of the activities of the people in the Public Health Service at all. We know that those that have helped us so much in getting organized have their hearts in the right places. We may not equally agree with all of the things that the Public Health Service does as a unit of Government, and also we have not the assurance that our present friendly relationships with the Public Health Department will continue. We may have other agents of the Service to deal with.

H. PRENTICE: Mr. Chairman, it seems to me that a thing like this proposal implies, is a matter beyond the scope of activities of this Technical Task Committee. It falls within the purview, perhaps, of Congressional committees, of the Bureau of Budget, or perhaps other citizens committees of the Hoover report, or some such group other than the Committee on Technical Tasks for Industrial Wastes. It just doesn't seem to me to fit into the pattern of our operations to date. I would dislike very much to support that type of resolution.

L. COX: Is there other discussion of this resolution?

C. S. BORUFF: I go along with Mr. Prentice. This matter has been brought up and discussed and the members of the Public Health Service know our feelings as recorded in the minutes of this meeting. Someone might get ahold of this resolution and think that we are trying to take a left handed poke at the Public Health Service.

R. HOAK: Of course, that was never the intention as I have tried to explain. Your point and Mr. Prentice's both are certainly appropriate, but doesn't it rest upon us, not necessarily as a Committee, but as citizens to do what we can to cut down the enormous wastefulness?

C. S. BORUFF: Agreed, but not by way of this Committee.

L. A. DANSE: Mr. Chairman, I would like to ask a question as an interested visitor. Is it collateral with this discussion that perhaps the money that was expended in this direction might far better have been spent in the direction of mitigation of pollution, and stream studies, and comprehensive programs, or some such thing?

C. E. SCHWOB: May I speak on this for just a minute? I'm interested, too. That particular document is not a document of the Water Pollution Control Division. There is a portion of it that we helped to prepare. It was not paid for by Water Pollution Control money. If you are talking about the summary report that we got out, "Water Pollution in the United States", we did prepare that. We prepared the reports on the river basins. We take no responsibility, whatever, for this one. We didn't pay for it, but we did contribute to furnishing some information that was in some of our other documents.

L. A. DANSE: That's the reason I asked the question. Is it the sense of the proponents of this resolution that this sort of propaganda is not so valuable as the sort of work that you have been doing in your Division?

C. E. SCHWOB: That's right. We are not putting out this sort of thing, because we don't have money to spend like that. We do where we have information that we want to put out like the "National Summary". We put that out and we put it out in popular style so that without doing a lot of reading ordinary individuals could readily digest it by looking at the bar graphs and some figures over at the side. We're really concerned about this whole printing too, because it's really dynamite. I am glad to see a group like this interested in it, because I have to pay some of the bills too. If we can cut down the Government work force, and if we're spending money for something that is of no value, we should be stopped.

L. A. DANSE: We have been limited in the scope of our activities in pollution control by lack of funds. Definitely in more than one direction, and I don't think that it is out of order for us to discuss this thing. It may be out of order for us to go on record about it, but certainly this kind of propaganda doesn't help to mitigate pollution, and I don't believe it helps the public health, either.

L. COX: In view of the discussion of this resolution, is there a motion for its adoption? In the absence of any motion will you continue with the next resolution.

R. HOAK: The next resolution is more or less collateral. This agenda is certainly a handsome and impressive job. Your committee questions whether anything so elaborate is necessary. We have therefore worded a resolution in this wise:

> "Agenda should be produced economically and held to the smallest size consistent with inclusion of all essential information."

Preparation of a document such as this represents considerable time. There is no doubt that it is an attractive and convenient booklet, but it does contain a lot of pages that don't have anything on them.

L. COX: Is there discussion of this resolution?

E. A. LEONARD: Like the other, it has been mentioned, it should be sufficient.

R. HOAK: It seemed to us that a satisfactory agenda could be prepared by listing the summary program together with the members of the Committee and then make a suitable note that mimeographed copies of certain material for discussion would be distributed at the meeting or be included with the program.

L. COX: Of course, one of the things that we formerly requested is that if the subject was to come up at the meeting that the information be distributed far enough ahead of time so that we could consider it and, therefore, be able to discuss it intelligently. So in the absence of any sentiment for adoption of the motion, do you have any others?

R. HOAK: One more. I don't think that we will have any argument about this one.

L. F. WARRICK: Just a moment. Before we go beyond that, do you want me to send out the information to you in advance of the meeting, the supplementary information so that you can read it and be prepared at least to have the background of information?

R. HOAK: Of course. All we meant was that we didn't need quite as fancy a job as this. Resolution No. 4:

> "Mr. Lyman Cox, who has served with distinction as the Chairman of this Committee since its original organization, has found it necessary to resign from the Committee. The Committee hereby records its deep appreciation of his services and extends to him its best wishes to him for high success in his new post."

L. COX: Gentlemen, thank you very much. That's a resolution that I will not try to handle but I greatly appreciate it.

R. HOAK: I think that we can assume that that is passed by acclamation. That's all we have.

L. COX: Dr. Hoak, thank you very much. We have a committee headed by Lee Burroughs on nominations and I wonder whether in view of the procedural item that we just adopted, whether we need to have a report from that committee or not, because in view of that Dr. Gehm would succeed to the office of Chairman. He and Lou Warrick would appoint a new Vice-Chairman who would serve until... This would be the time when you would normally elect officers. All right Mr. Burroughs, do you have a report for your committee?

Report on Nominations --LEE BURROUGHS

Gentlemen, your nominating committee found it somewhat difficult to complete its slate of suggested candidates. We had a wealth of wonderful material to scrutinize, as the Committee has many capable and informed people. We have maintained close contact with the thinking and proposals of the rules and procedures group under Dr. Hoak and our decision conforms with the spirit and letter of action just taken by this Committee. Our proposals are as follows: Mr. Harry Gehm, Chairman; Mr. Howard Prentice, Vice-Chairman; Mr. Lou Warrick, Secretary. That's the report of the nominating committee, signed Burroughs.

L. COX: Our nominating committee has placed in nomination the names of Dr. Harry Gehm for Chairman, Howard Prentice, Vice-Chairman, Lou Warrick for Secretary. Are there nominations from the floor for the office of Chairman? Are there nominations from the floor for the office of Vice-Chairman?

H. PRENTICE: Mr. Chairman, I didn't know about this until a very short time ago and it caught me a little bit off balance, but I have been thinking deeply about it and for a minute I would like to be a little serious. Our industry is actively interested in this Committee's work and will also continue to be so. The staff of the Corn Industries Research Foundation is small. I myself am interested in Trade Association Management and that involves all kinds of problems of which one small segment, in my case, is to work with this Committee. That doesn't lessen my interest. I don't know just what the parliamentary procedure is but I would like very much to have the support of the group to back me up in the nomination that I am about to make for the office of Vice-Chairman. I feel that we should have a man for the permanent continuity of this Committee who is technically skilled and technically qualified in this field of industrial waste. I feel that this Committee's work is so good and so valuable, that we need as our Chairman and as our Vice-Chairman, in the event that any appearances are necessary, I have in mind that he might be invited into a Congressional committee to testify, or there might be other occasions where you want a good sound technical man and I am not that. Therefore, I would like in carrying out the policies we have adopted in selecting the officers between these various groups to nominate a member of the food group for the office of Vice-Chairman and I would like to place a nomination for Dr. Boruff for that office.

L. COX: Dr. Boruff is now nominated for office of Vice-Chairman. Are there other nominations for this office? Are there other nominations for the office of Secretary? Is there a motion that the nominations be closed?

UNIDENTIFIED: I so move.

L. COX: Will those in favor of the motion please signify by saying "I". Opposed by saying "No". Mr. Secretary will you arrange for a vote on the office of Vice-Chairman? That is the only office that is being contested.

L. COX: Gentlemen, I wish to announce that your new Vice-Chairman is Dr. Boruff. I might add that he had a very able campaign manager, not from any sense to detract from his worth and ability. So your new slate of officers will be Dr. Harry Gehm, Chairman, Dr. Boruff, Vice-Chairman, Mr. Warrick, Secretary. There has already been a bit of discussion about Item 21 which is a newsletter on the National Technical Committee activities. Now that newsletter that is contemplated would largely concern activities of Committee and task groups established by the Committee, but could be augmented by the issuance of material that was timely so far as information was concerned; however, there may very well be some difficulties in putting out such documents and such information so I would like to ask Mr. Warrick to comment on that aspect of the matter.

L. F. WARRICK: As I mentioned the other day in connection with this topic in the Secretary's report, we had found out when we were about to issue this newsletter to you that such letters must be approved through channels and by the Bureau of the Budget. Accordingly we didn't issue it as such, but I have included it for discussion here. What would be the value to you of such a letter? If you feel this would be helpful, it would be possible to work out some arrangement whereby we might collect that information and put it in suitable form. Could duplication of it, at least until such time that authorization might be forthcoming, be gotten out as a task in rotation by some of the members of this task group? There would be in the neighborhood of seventy-five to one hundred copies, for the moment, that would be required. It is contemplated that it will be two or three pages of typed material. It was originally intended to simply cover Task Committee activities, but others have suggested that we might cover timely news items of interest to all Committee members such as the items that are included on that sample sheet. I would like to get your ideas and suggestions or what your views are.

H. PRENTICE: I think a news bulletin on a regular basis is quite a chore for a fellow to operate. We have that problem all the time. Once you tackle something on a regular basis, you find deadline publication time dates creeping up on you, what am I going to put into it; and I think, perhaps informal mimeograph memorandums from the Secretary, just memorandums to the Committee members, thus and so happens, could be put out. Or if you find a piece of information--attached is thus and so.

It would be very simple and informal on a basis that he writes to us when he has something to write about. I think a newsletter, committing yourself to a regular system, is pretty hard to administer unless you have a lot of time, Lou.

L. COX: Well one thing that you can do in case there was something about which the Committee needed information, address a letter to the Chairman with copies to the members and put into it whatever you wanted to. And these timely topics, by any name would convey the same amount of information. Are there other comments on this score? Suggestions as to what kind of communication system we ought to have operating within the Committee? That's what we are really talking about.

H. PRENTICE: Why not follow that through. If you write a letter to the Chairman, have copies for the members, unless it is something personal, or if we write a letter to the Secretary, have copies to the Chairman, I mean have something understood that you send copies automatically so that both the Secretary and Chairman are constantly informed as well as members of the Committee. That's easy to do.

C. S. BORUFF: Why don't we leave this on an informal basis.

L. COX: I think that that is perhaps suitable with the group and after that's operated for a while, then if you want to revise it why of course you will be able to. Are there other matters that should come before the Committee at this meeting? I didn't invite the committee on news releases to report. Mr. Green isn't here.

UNIDENTIFIED: We have had as far as I know, no writers or newspapermen asking for information.

L. COX: I hadn't seen anybody around trying to get information so I supposed you would not have an occasion to function.

L. F. WARRICK: I'm wondering then whether you want us to follow the same procedure that we followed last year on the news release that was gotten out shortly after the meeting to the trade associations and to the various other publications that were interested in covering the Task Committee activities.

UNIDENTIFIED: I think that the last one was very good and that we can follow the same policy.

L. COX: That's what I would think, because you certainly want to inform people that are interested in the Committee concerning the new officers so that they will address their inquiries to Dr. Gehm and not to L. Cox and a few things like that. Are there any other items of business?

H. PRENTICE: I think that we ought to have on record our verbal thanks of the Committee to the staff of the Public Health Service that were operating it. I'm speaking of our gentlemen over here on the recorder and the two girls and so forth. Mr. Reed and his associates. Some suitable thing should be on the record I think.

L. COX: I think that everyone will agree very heartily with that. I move that the Secretary be instructed to see that the minutes of the meeting carry that quotation. Is there a second? Those in favor of this motion please signify by "I". Those opposed by saying "No". Are there any other items of business? Well we'll entertain a motion for adjournment. Will those in favor of the motion signify by standing up. Good-by boys, see you another time. It's been a real pleasure working with you.